

# COMPUTERWORLD

## IBM, Apple seal promise-laden pact

BY JAMES DALY  
CW STAFF

Will last week's IBM/Apple Computer, Inc. alliance result in the "renaissance in technological innovation" that Apple Chairman John Sculley foresees, or will it be a sack of unfulfilled promises? Users who have seen similarly hyped unions fall short of their intended goals are keeping their fingers crossed and hoping the pair can deliver on plans to link the two most popular computing platforms.

As expected, the former rivals signed contracts to form two joint venture companies to create operating systems and develop multimedia software.

They also unveiled a blueprint for a next-generation Unix system that will merge IBM's AIX Unix, the Apple Macintosh inter-

### Deliverables

Products from the Apple/IBM alliance are expected to be released over a five-year span

- Connectivity tools to integrate Macintoshes into IBM networks. First products due in December 1991.
- New family of RISC chips for PCs and workstations. Products due in the mid-1990s.
- New open systems environment derived from AIX, the Macintosh and the Power PC architecture. Products due in the mid-1990s.
- Kaleida, an independent firm, will create multimedia technologies. First products expected in the mid-1990s.
- Taligent, an independent company, will develop an object-oriented operating system. Product due in the mid-1990s.

Source: Apple Computer, Inc./IBM

face and a powerful new microprocessor, as well as plans for a suite of connectivity products that will begin arriving by the end of the year.



CW Chart: Janet Cunningham

If successful, the ambitious joint effort would greatly boost the ability of Macintoshes and IBM Personal Computers to interact and open up the opposing

platforms to those who have long cringed at mixing them.

"Where we have dismissed Apple in the past, this could open our eyes," said Joseph Vitorio, assistant vice president of information systems at Consolidated Edison, an electrical utility in

### ACEs up

► The ACE consortium has grown and has better defined its desktop technology. Page 137.

New York. "This brings Apple credibility in the business community."

Users are aware, however, that a long road of highly complex technical work lies ahead. "Immediately, this doesn't mean

Continued on page 135

## Tax change could slap buyers with extra software expense

BY GARY H. ANTHIES  
CW STAFF

WASHINGTON, D.C. — A U.S. House of Representatives bill that in a good chance of passing could significantly boost the cost of purchased software while forcing users to carry some software on their books long past its useful life.

The bill would require the purchase value of intangible assets — such as software, databases, customer lists, trade-

marks and "good will" — to be amortized, or written off, over a period of 14 years. For software buyers who now typically write off software in five years or less, that would defer tax deductions and effectively increase the cost of the software (see chart).

Predictably, both users and software vendors lined up in strong opposition to the Bush administration-supported bill, arguing that software is not really intangible and that tax laws

Continued on page 10

### Long-term cost

Carrying software costs over a 14-year period could translate into a 21% higher cost than expensing it immediately

#### Alternative I: Expense immediately

Cash purchase price	\$100,000
Tax deduction (corporate rate 34%)	\$34,000
Effective cost	\$66,000

#### Alternative II: Amortize over five years

Cash purchase price	\$100,000
Net present value of tax benefit over five years (discounted at 10%)	\$28,000
Effective cost	\$72,000

#### Alternative III: Amortize over 14 years

Cash purchase price	\$100,000
Net present value of tax benefit	\$20,000
Effective cost	\$80,000

Source: Lotus Development Corp.

CW Chart: Michael Higgins

## DEC to extend open network strategy

BY ELISABETH HORWITT  
CW STAFF

SAN JOSE, Calif. — Digital Equipment Corp. is expected to contribute to the openness theme of this week's Interop '91 show with several announce-

ments that link its systems with those of other vendors.

DEC plans to announce availability dates for its Open Systems Interconnect-based routers, links between Ultrix and IBM's Systems Network Architecture and Token Ring versions

of its Pathworks client/server software, according to a DEC press release draft obtained by Computerworld.

The announcements are further proof that DEC and other computer vendors have realized that users will no longer automatically buy the vendors' proprietary networking products to accompany their hardware and software, said Rick Villars, director of Computer Network Architectures at International Data

Corp. in Framingham, Mass. The major vendors are choosing to address users' multivendor networking needs themselves rather than see the money go to third parties, he added.

### Fall filing

► DEC's VAX product line is due for an end-of-the-month shake-up. Page 6.

With the expected announcements of DEC Network Integration Server products, DEC will claim to be the first vendor to ship routers supporting the OSI Intermediate System-to-Intermediate System routing standard.

The vendor has tagged a January 1992 shipping date and a

Continued on page 6

## Users griping about slack AIX support

IBM commits to quick service improvements

BY JOHANNA AMBROSIO  
CW STAFF

SANTA CLARA, Calif. — Users gathered here last week said there are some holes in IBM's much vaunted technical support, especially for the AIX Unix-based operating system.

The fundamental problem, users said, is that there are too few technically knowledgeable IBM representatives trying to serve too many customers. Some users said they felt that IBM's primary push has been on marketing and selling the RISC System/6000 line, which runs AIX, at the expense of support.

"We've found there to be a great shortage of systems engineers that can help us ramp up," said William Ramsey, senior analyst at Abbott Laboratories in Abbott Park, Ill. "To be fair to IBM, we didn't give them much notice. We told them we were buying 15 RS/6000s, and we needed help, fast."

Ramsey said he has experienced no problems on the hardware side of things, just on the software end. He and other users were here for AIX Expo, an RS/6000 trade show and user group conference.

Another customer at a large Midwestern computer-goods company said, "Every time I ask

Continued on page 8

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### Product Spotlight —

TCP/IP can work for PC LANs — if you're willing to work at it. Page 97.

A crackdown on computer crimes may help to define those crimes. Page 4.

It's transition time for banks — some must look to outsourcing and others have to look at new ways to justify their investments. Pages 8 and 113.

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## Quotable

**"This brings Apple credibility in the business community."**

**JOSEPH VALLOROSI**  
CONSOLIDATED EDISON  
*On the Apple/IBM joint venture. See story page 1.*

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# EXECUTIVE BRIEFING

■ While IBM and Apple signed contracts and provided details on their partnership last week, users expressed hope that this alliance will show more results than some other industry unions have. The firms pledged to do the following: establish joint venture companies to create operating system and desktop multimedia software; develop a new Unix based on IBM's AIX and the Macintosh interface and a new microprocessor for a mid-1990s release; and begin releasing connectivity products. Page 1.

■ Banks have traditionally not been required to provide a direct link between system implementations and business value. That may be changing: Top IS banking execs, pressured by a faltering economy and bad debt, are looking more closely at downsizing and are scrutinizing measurable areas such as applications development costs, chargeback fees, data center costs and project payback periods. Pages 8, 113.

■ Met Life confronted the threat of several computer viruses scheduled to trigger on Friday, Sept. 13, and came out virtually unscathed. The company attributes its success to an ongoing computer security awareness program. Page 89.

■ The Micro Managers Association tells software vendors it wants more liberal licensing policies, particularly for software running on a network. Page 4.

■ A U.S. House of Representatives bill on intangible assets, which includes software, would require such assets to be written off over the course of 14 years, delaying tax deductions and increasing the overall cost of software. Page 1.

■ IS managers are stoking employees' motivational fires via job rotation, education programs, frequent performance appraisals and more open lines of communication. Page 121.

■ The U.S. Department of Justice says it will play hardball when it comes to computer crime. The agency's pending computer crime unit will prosecute such offenses and push for tougher penalties. Page 4.

■ It looks as if Oracle users will have to wait until next year to get Version 7.0 of its relational database management system, which is intended to support a distributed database environment. Page 136.

■ As users demand laptops and portables in addition to their desktop systems, managers scramble to set standards. Page 129.

■ European IS managers do not expect budgets to be much bigger next year. Almost a third of those surveyed said 1992's budget would be the same as this year's, while 10% said they expect a decrease. Page 89.

■ Some IBM RS/6000 users are not satisfied with the quality of service they've been receiving, but IBM promises it will improve soon. Page 1.

■ While the TCP/IP market continues to grow? According to Newton-Evans Research's latest report, no. Hardware and software markets will peak in 1992 and decline from then. What will increase are TCP/IP services, including network administration and central network management. Page 97.

■ On site this week: The Travelers turns the client/server concept into reality by producing some of its own software for the architecture. Page 77. Bell Atlantic launches a \$1 billion project to revamp hundreds of applications and move from a mainframe-based architecture to open systems. Page 29. The U.S. Department of Justice's Civil Rights Division will use computers for the first time to analyze states' redistricting plans and to ensure that they are fair to minority groups. Page 65.

## The 5th Wave



WHAM! HE'S NOT THAT SMART. HE NEMT DICK UP HIS HARD DISK, FORGETS TO CONSISTENTLY NAME HIS FILES, AND DROPS ALL OVER THE KEYBOARD.

# Sorting is critical for efficient, competitive direct marketing operations

To maintain a leading position in the highly competitive direct marketing business requires a dedicated focus on controlling overhead costs while providing enhanced customer services. To achieve these seemingly contradictory objectives, leading direct marketing firms rely on sophisticated data processing systems.

AT&T American Transtech, Jacksonville, Florida, a wholly-owned subsidiary of AT&T and one of the nation's largest direct marketing firms, is a case in point. The company was established in 1983 to act as the stock transfer agent for all AT&T and regional Bell operating companies (RBOCs) after AT&T's divestiture. Since that time, service offerings have been expanded to include shareowner service functions for other companies, financial print and mail, and direct marketing.

From its inception, AT&T American Transtech realized that capturing a lion's share of these markets would require maximizing the efficiency of mailing operations to the point where many of the accrued savings could be passed along to their customers. Only by differentiating their services and fee structure this way could the company establish itself as an industry leader.

For example, by implementing Group 1 software (Green Belt, Maryland) and SyncSort OS (from Syncsort Inc., Woodcliff Lake, New Jersey), AT&T American Transtech has saved more than \$1.2 million in postage costs during the last six months for its customers. Additionally, the same process enables the company to cost-effectively pre-process and pre-sort customer data—steps that other direct marketing firms require from the customer before they will even accept mailing data.

"By sorting mailings according to various post office requirements, postage costs can be reduced about 20 percent," explains Ralph Martin, Programmer Analyst at Transtech. "However, since postage costs are passed along to the customer, most direct marketing companies do not bother to perform the requisite sorts. Or, if they do complete the sorting, it is done in such a way as to incur a large overhead cost that is also passed along to the customer."

"Our approach," he continues, "is different. By streamlining sorting and mailing operations with a sorting process that minimizes both programming and processing overhead, we are able to pass along the full postage savings to our customers."

The sorting software utilized by Transtech interfaces directly with their mailing system to provide an integrated solution. Files containing names and

addresses of individuals to receive a mailing are first sorted by zip code, and, if required, a grouping code. Grouping codes provide a secondary sorting criterion, such as mailing date or mailing contents.



Ralph Martin, left, Programmer Analyst, and Bob Shahbazi, Statistical Analyst of AT&T American Transtech, Jacksonville, FL

"These sorted data files," explains Bob Shahbazi, Statistical Analyst at Transtech, "are then passed to the mailing system which generates zip code statistics. We then use the Group 1 and SyncSort software to sequence these statistics and merge them with the sorted names and addresses to determine the appropriate trays and bundles for each letter."

Additional sort codes may also be attached to the tray numbers. "For example," Shahbazi says, "we mail over eight million dividend checks every quarter for AT&T and the 7 regional holding companies which have to be delivered all over the country on the first day of various months. In order to ensure timely delivery, mailing dates need to be based on destination location; mail going to Los Angeles is sent via truck, for instance, so it has to be sent earlier than mail to Hawaii which goes via airplane. Such scheduling is easily accomplished by using our sorting software to rank the zip statistics on the basis of mail time."

Transtech's sorting software is also used for separating customer data for multiple mailings. "Sometimes customers send us a single tape of data containing coded names and addresses which are to receive different inserts in their mailings," Martin explains. "We save our customers the hassles of pre-sorting data by incorporating this category sort as an integral part of our global zip code sorting process."

"With our sorting software, we're able to set up a multiple-tiered sort and the coding required for generating the rather complicated report detailing counts for all categories in about 30 minutes," he continues. "Without SyncSort the set-up process might take more than one day to write, test, and debug a COBOL program. Our method results in lower data processing costs for Transtech and its customers."

Transtech also uses their sorting software to modify record formats to their standards, enabling their customers to submit data in any format they find convenient. "A customer may submit data with the three address fields scattered over the record," Shahbazi says. "Where other shops may either refuse to accept such data, or take several hours to write COBOL programs to reformat the records, we modify record layout to meet our standards in a sorting process that takes about 10 minutes to set up—and runs with significantly less overhead than a COBOL program."

Operating overhead is also reduced by using a SyncSort E15 sort exit to modify endorsement lines which appear on envelopes to indicate, for example, if a mailing is presorted. "Some direct mail operations," Martin says, "would begin the modification process by sorting the data, then running a separate application program to modify the line. With this approach another program is required for printing the modified lines."

"What we do instead," he continues, "is modify the record in one pass during the sorting process, thereby eliminating the need for separate COBOL programs and slashing run time for the process."

According to Shahbazi, SyncSort has streamlined operations to the point where he can accomplish in as little as four hours what it would take a COBOL programmer 40 hours to complete. "Besides significantly reducing labor and overhead," he says, "efficient sorting also reduces time spent on tape mounts, and cuts I/O so programs execute faster. I have personally run routines in half the time the same operation would have taken with a COBOL program. Savings with SyncSort are so great, the product pays for its annual licensing fee in the first few weeks of every year."

For AT&T American Transtech, the real benefit of such sizably decreased overhead costs is the ability to offer the highest quality service at the lowest possible price. "By maximizing utilization of our data sorting software, we have been able to respond to our customers' needs for sophisticated data processing services at prices we both can afford," Martin says.

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# Justice revs up battle on computer crime

BY MICHAEL ALEXANDER  
CW STAFF

WASHINGTON, D.C. — The nation's top federal computer crime law enforcers announced plans last week to escalate the war on computer crime.

At the federal government's 14th National Computer Security Conference held here, officials at the U.S. Department of Justice said the department is launching a computer crime unit that will be charged with prosecuting crimes and pushing for stiffer penalties for convicted computer outlaws.

"Computer crime is on the rise, and the Justice Department

is taking this area very seriously — as well as the FBI, U.S. Secret Service and the military," said Mary Spearing, chief of general litigation and legal advice at the Justice Department.

The new crime unit will also advocate closing loopholes in the government's computer crime statute. The Computer Fraud and Abuse Act of 1986 "is outmoded and outdated," said Scott Charney, a computer crime prosecutor and chief of the new computer crime unit.

The Justice Department wants to amend the law with a provision that would make inserting a virus or worm into a

computer system a crime, Charney said.

Law enforcers also want to add a provision that would make it a felony to use a computer system without authorization and to cause damage through reckless behavior. The current law stipulates that the intent to cause damage must be deliberate.

Those convicted of computer crimes will more often be sentenced according to federal guidelines rather than on recommendations of prosecutors, who may seek for lighter penalties, said Mark Rasch, the government's attorney who prosecuted Robert Morris in the infamous Internet worm case.

A new Justice Department policy now mandates that all defendants will be treated equally, without regard for personal history or other factors that might mitigate their sentences, Rasch said.

"The penalties for computer crime will become increasingly more severe," predicted Kent Alexander, assistant U.S. attorney in Atlanta. "In five years, they are going to look back and think [a year in jail] was a light sentence."

The FBI is "staffing up to address concerns about computer crimes" and increasing its training efforts, said Mike Gibbons, FBI supervisory special agent.

## White paper urges more liberal software licenses

BY CAROL HILDEBRAND  
CW STAFF

NEW YORK — Personal computer managers last week sent a loud, clear message to the vendor community: More liberal software licensing is the direction of the future, and those refusing to comply do so at their own risk.

"It's pretty simple — if you don't like the licensing, don't buy the software," said Jeffrey Knepper, director of technology at Debitte & Touche. "It will have an effect on the company's sales."

The Micro Managers Association presented a white paper on network licensing software at the group's annual conference here. According to D. Keith Herrin, co-chairman of the committee presenting the paper, the variety of software licensing agreements available makes it difficult for a manager to control and keep track of what type of software is under what type of agreement. Software can be licensed per machine, per user or per server and on a concurrent-use basis as well as by site/entry. Often, a manager can have one of each type of licensing agreement in the office, making it difficult to keep users educated.

The increasing use of local-area networks also makes administering the various licensing schemes a logistical nightmare. The committee forwarded the following recommendations to help establish a consensus between factions:

• Application software on a network should be available for licensing on a concurrent-use basis. In a concurrent-use license, a company licenses a certain number of software copies and puts

them on the network. Metering software prevents users in excess of the preset number from accessing the software.

• Metering software is a necessity for concurrent licensing. The metering package should be integrated with the network operating system with a standard application programming interface.

• Licensing agreements need to be written in more standard language that is clearly understandable to both parties.

• Documentation should be separated from licenses.

• Organizations should be able to upgrade from stand-alone software to networked versions for a price comparable to that of a major upgrade.

PC managers must educate their users on licensing issues and software piracy as well as establish a standard policy.

Users interviewed at the conference voiced nearly unanimous

### Licensing decisions

Managers favor fewer software licenses that are easy to administer

Licensed per site	45%
Licensed per concurrent use	31%
Licensed per file server	22%
Licensed per machine	0%
Licensed per individual	1%
Other	1%

Percent of respondents; survey base: 137

Source: Micro Managers Association

support for concurrent licensing, a scheme that is gaining support among vendors but which some holdouts, such as Wordperfect Corp., refuse to sanction.

Although the concurrent li-

censing idea received support from such vendors as Microsoft Corp. and Symantec Corp., they were not as optimistic on other points. For example, Microsoft said it has no plans to offer site licenses, another popular option. And both vendors sized the idea of adding metering software into network operating systems, opting for endorsement of third-party efforts.

Beth Haskell, a computer coordinator at the Trust for Public Land, argued that concurrent licensing is something that works and also expressed interest in so-called 80/20 licensing, in which a user who runs an application on his desktop about 80% of the time is free to use that software on the road or at home the remaining 20%.

## CA DBMSs to run Wang imaging systems

BY SALLY CUSACK  
CW STAFF

NEW YORK — The meteoric rise of Wang Laboratories, Inc. continued last week when the company signed a deal to provide software giant Computer Associates International, Inc. with Wang imaging systems that would run in conjunction with CA's mainframe-based database management packages.

On a royalty basis, CA will add Wang imaging capabilities to the CA-DBMS and CA-Datasync/DB database products and to the CA-ADS and CA-Ideal applications development environments.

CA's niche market of database users has decided not to migrate to IBM's DB2 and, subsequently, does not have access to IBM's Imagination software.

This creates a market opportunity for Wang's imaging prod-

ucts on the mainframe, said Ajit Kapoor, director for image management strategies at Meta Group, Inc. in Westport, Conn.

While cash terms of the contract were not disclosed, William P. Ferry, senior vice president and general manager for Office 2000 Systems at Wang, said this is a multiyear agreement with an initial period of three years.

CA plans to have the image-enabled software products, its first, delivered by the first quarter of 1992. Wang will provide CA customers with image server and desktop hardware and software designed to integrate tightly with the CA applications. The company will also offer image consulting services.

Wang will continue to market its imaging products on its VS minicomputer platform and will continue to seek opportunities with other vendors.

Last week's alliance will allow CA customers to reap the productivity gains of imaging without expensive database upgrades on the mainframe, said Kurt Seibert, CA's vice president of strategic alliances.

However, Kapoor is not optimistic about long-term success. "The bottom line is that the mainframe is not going to be a strategic platform for image processing," he said, pointing out that imaging is increasingly being offered in a client/server architecture.

Wang and IBM partnered earlier this year with an initial \$25 million agreement whereby Wang VS minicomputer users would be provided with a conversion path to the IBM Application System/400 platform. Wang will also resell IBM's RISC System/6000 and Personal System/2 computers.

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# Interop '91 blends LANs and WANs

BY JOANNE M. WEXLER  
CW STAFF

**SAN JOSE, Calif.** — The ever-shifting bottleneck in communications networks is approaching the corporate backbone, and equipment and services on line at this week's Interop '91 show here are attempting to unblock the clogs.

Public and private wide-area technologies are emerging to keep pace with today's highest speed local-area network, the 100MB/Sec. Fiber Distributed Data Interface (FDDI) LAN. Users will encounter scores of local- and wide-area network product suppliers and carriers

hooking equipment together to accommodate such speeds and to allow users to manage enterprise networks collectively.

"What you'll see in speed is driven by FDDI," said Charlie Robbins, director of communications research at Aberdeen Group, a Boston-based consulting firm. "The bottom line is that users want an integrated strategy for efficiently tying LANs to WAN resources."

For example, several once-wide-area-only vendors will be spreading their wings to merge WAN and LAN networking and to manage enterprises with Simple Network Management Protocol (SNMP)-based systems.

Such vendors include Timesplex, Inc., Network Equipment Technologies, Inc. and General Datacomm, Inc.

Dan Lynch, president of show sponsor Interop, Inc., added that this year marks unprecedented participation by public carriers. For example, he said, one regional Bell operating company (RBOC) is flying in 18 executives from a potential customer site for its demonstration of Switched Multimegabit Data Service (SMDS), a 45MB/Sec. public service that will be tariffed in some regions by 1992.

"I'm real interested in SMDS because we're headed for high-speed campus networks" and

because of the service's switched nature, said Dan McCormick, manager of networking and integration at GTE Federal Systems Division in Chantilly, Va.

McCormick said he is also interested in the emerging High-Speed Serial Interface (HSSI), a de facto industry-standard electrical interface supporting data transfer rates of T3 (45MB/Sec.) and higher. T3 connections among multiple LANs via HSSI will be demonstrated by router vendor Cisco Systems, Inc.

Cisco will also participate in an integrated frame-relay/Basic Rate Interface Integrated Services Digital Network (ISDN)

demonstration at switch maker Northern Telecom, Inc.'s booth. ISDN service is expected from most RBOCs by the end of 1992.

"We'll find a distinct link between an ISDN desktop and a frame-relay backbone through our DMS-100 central office switch without... modern pools or multiplexers," said Steve Campbell, a director of market development at Northern Telecom. "This is significant for small corporate locations not on a LAN that must connect to the corporate backbone. ISDN will give those sites dial-up access to the corporate frame-relay network."

Attendance at Interop is expected to soar from last year's 22,000 to at least 30,000, including 1,000 international attendees this year.

## DEC network

FROM PAGE 1

\$14,000-to-\$40,000 price range to the products, which were announced in June. The products will consolidate multi-protocol routing, bridging and X.25 packet switching inside one box.

However, DEC said in June that the first release would route Decnet, Transmission Control Protocol/Internet. Protocol (TCP/IP) and OSI protocols only, with no mention of local-area network-layer protocols.

"The key for us is how soon [Novell, Inc.] IPX routing will happen and that is a Novell-critical," said Bruce Altmach, technical manager of data communications at the U.S. Environmental Protection Agency's data center in Research Triangle Park, N.C.

The EPA is a 9,000-node network shop that also runs TCP/IP, Decnet and X.25 traffic.

### IPX support

IBM, now expected to announce availability of its own RISC System/6000-based multiprotocol router, has not excluded IPX support in its first release, which would give the firm an edge, according to Altmach.

DEC will announce immediate availability of the 802.5 Token Ring products from Proteon, Inc. under the reselling agreement it announced last summer.

The company is also expected to provide Pathworks software to connect Microsoft Corp. DOS and OS/2 clients and servers over Token Ring LANs.

While extending Pathworks' client/server environment, the Token Ring should help DEC sell itself as a full-service network vendor, few customers will have use for such an offering, said Keith Addison, a network analyst at G.D. Searle & Co.

Searle, a combination IBM/DEC shop, runs Netware on its

Token Ring personal LANs, with users accessing VAX printer services via Netware software and Proteon routers, Addison said.

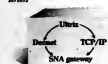
DEC is also expected to extend its IBM interconnect program to the Ultrix and TCP/IP environments by announcing a series of products that connect Ultrix systems on Decnet and TCP/IP to IBM SNA systems.

The new Ultrix/SNA products are said to support the same range of services as DEC's established gateway for VMS with additional support for TCP/IP-to-SNA communications. All products are scheduled to ship by February 1992.

The new Ultrix services should bolster DEC's open-market credibility because "it's been a challenge for DEC to talk openness and say it is pushing Unix

### Piecing it together

The key points of DEC's networking introductions are an Ultrix link to SNA and a Token Ring-based tie between clients and servers



and not provide the same services they provide over Decnet for VMS," Addison said.

DEC is also announcing Version 1.1 of its Simple Network Management Protocol (SNMP) Remote Decnet Management Station for Ultrix, with support for additional Decnet products, including the new routers, LAN



CW Chart: Distributed Gateway

bridges, Fiber Distributed Data Interface concentrators, Decbridge and Decserver Terminal Server products.

The new version is also expected to support the SNMP Remote Network Monitoring protocol, which supports communications between central network management stations

and LAN monitoring as well as diagnostic devices (CW, Sept. 30).

By allowing its proprietary network devices to be managed from the same SNMP station as other vendors' devices, DEC is differentiating itself from IBM, which plans to keep SNMP-based network management separate from the system that manages its own Token Ring LANs.

DEC is also expected to announce plans to provide SNMP management support for the Decserver 300 Terminal Server V2.1, as well as its workgroup family of networking products.

DEC would not comment on these expected announcements when contacted last week.

*Senior Writer Janice Wester contributed to this report.*

## DEC's fall rollout plans include beefed-up VAXs

BY MARYFRAN JOHNSON  
CW STAFF

**MAYNARD, Mass.** — On Oct. 30, Digital Equipment Corp. will hold its annual fall fling of new products in a massive rollout that will likely include souped-up VAX hardware, revamped licensing practices, repackaged applications software and the new version of the VMS operating system.

Users and industry analysts familiar with DEC's plans said they expect the following to be announced:

- New models of VAX 6000s, VAX 4000s, Vaxstation workstations and an additional Microvax 3100 — all with performance at least double that of preceding models and aggressively priced to compete with IBM and Hewlett-Packard Co.
- A repackaging of current Net-

work Application Support (NAS) products to make them easier to sell, install and integrate. Also stated is the first clear commitment on how and when DEC will license NAS applications for other hardware platforms.

• A mass presentation of the next operating system version, VMS 5.5, with pieces of it unbundled so users can buy VMS stripped down or choose certain functions à la carte. Also expected are features such as universal timing and naming services to ease network management.

• First pieces of "Open VMS" with POSIX modules available, giving users the chance to experiment with moving code from Unix environments to VMS.

• Changes in the software licensing scheme, with user-based or "activity-based" licenses available to correct past inequities

from pricing by size of CPU.

Some analysts questioned how effectively DEC can push new VAXs now, however. With in the next year, the new generation of reduced instruction set computing-based Alpha VAXs is slated to start appearing.

"The Alpha family is going to be the midrange technology of the future," said Robert Parster, supervisor of DEC systems for the information management department at Sikorsky Aircraft in Stratford, Conn. "Buying VAXs now is buying into the end of the architecture. Why not leave now and buy Alpha later?"

DEC is already bridging certain key customers on the details of its Alpha systems, several users confirmed. Yet some users said DEC is making the right move by pushing its best current technology. "They're not really going to just drop the VAX line," said Paul Stiemann, associate vice president for computing at the University of Pittsburgh.

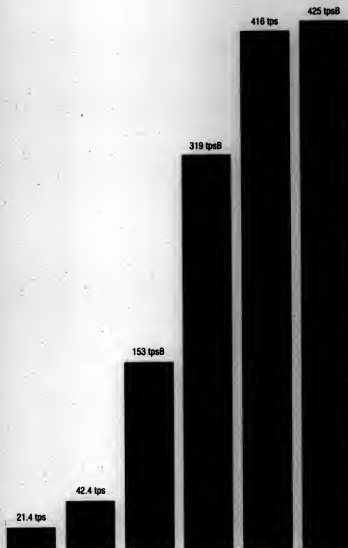
The lower priced hardware may mean a change in buying plans for some customers. With an entry-level, diskless Vaxsta-

tion priced as low as \$3,500, sites such as the Lawrence Livermore National Laboratory in Livermore, Calif., are already planning to buy more Vaxstations instead of additional Unix-based machines.

The unbundling of VMS should be welcome at smaller companies needing only a few basic features, but users at larger VAX/VMS sites may face more difficulty in systems administration and management.

In moving to repackaging its NAS software products, DEC is signaling a strategic shift in its thinking about how to sell DEC software on other vendors' platforms, analysts said. NAS is a broad set of programming interfaces, tool kits and integration software that includes products such as Decwindows and Pathworks for DOS.

"DEC wants to be in the software business, and the only way to be profitable is to sell on other platforms and increase market share," said Hal Kot, information systems officer at National Semiconductor Corp. in South Portland, Maine.



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## NEWS SHORTS

### Industry leader Biddle dies

A. G. W. "Jack" Biddle, 60, founder and president of the Computer & Communications Industry Association (CCIA), died Oct. 1 of cancer. He was a persuasive advocate of full and open competition, and he created CCIA in 1973 to promote the sale of "better, cheaper and faster" as criteria for success in the industry. In the mid-1980s, he led the formation of the Corporation for Open Systems, a global joint venture to promote interoperability of computer and communications equipment.

### Beeing scores Army deal

Beeing Computer Services last week beat out Computer Sciences Corp. for a \$1.6 billion, 11-year systems contract from the U.S. Army. Beeing will set up an integrated information system to support 9,800 Army National Guard and Army Reserve units at 4,700 locations, replacing a variety of unrelated hardware and software. The system will reportedly support rapid mobilization of forces and serve routine administrative functions. Beeing will install hardware from Digital Equipment Corp., Zenith Data Systems, Hewlett-Packard Co. and others.

### New Objectvision near readiness

Borland International, Inc. said it will ship Release 2.0 of its Objectvision applications development tool next month, adding that it is developing a separate version for IBM's OS/2 2.0 operating system. Borland also said it is developing a SQL link option for Objectvision 2.0 that will support access to data on SQL Server, Sybase and DB2. Both the OS/2 2.0 version and the SQL link are slated for a first-quarter 1992 ship date.

### IBM closes Metaphor deal

Metaphor Computer Systems, Inc. shareholders have approved the company's purchase by IBM. As a wholly owned subsidiary of IBM, Metaphor will focus on fully integrating Metaphor's Data Interpretation Systems capabilities with complementary IBM capabilities. Metaphor employees who were assigned to Patriot Partners' joint venture established by IBM and Metaphor in September 1989 will be offered opportunities with either of two new ventures announced last week by IBM and Apple Computer, Inc.

### New RISC models from IBM

IBM last week added a new decade model to its RISC System/6000 Unix-based line, the Powerstation/Powerserver 530R, offering 32% more processing power than the Model S30 at no increase in price. It is available immediately, priced at \$31,500 for a base system with 32MB bytes of memory and 400MB bytes of disk. In a separate release, IBM announced three full-featured reduced instruction set computing System/68 machines, which are rebranded Stratus Computer, Inc. systems. The System/68s, however, are priced about 30% higher than the identical Stratus systems.

### Tokren Ring links VAX to mainframe

Systems Strategies, Inc. announced last week what is said to be the first product to support communications between Digital Equipment Corp. VAXs and IBM mainframes directly over a Token Ring network. Through the firm's EZBridge software, VAXs equipped with Tokren Ring boards can talk to IBM hosts without a gateway, the vendor said. Availability is slated for year's end, with prices ranging from \$3,000 to \$15,000.

### Bank outsources systems

The Chase Manhattan Bank of Connecticut, a subsidiary of The Chase Manhattan Bank NA, said it will turn over part of its information systems operations to IBM's outsourcing unit, Integrated Systems Solutions Corp. (ISSC). ISSC will have approximately 30 of the 38 IS workers involved in that section of Chase's computer operations, a source at Chase said. He would not clarify which operations will be outsourced but confirmed that the bank expects to save 30% on IS-related expenses.

More news shorts on page 136

## Study: Outsourcing big in banks' future

BY MITCH BETTS  
OF STAFF

The flurry of mergers and outsourcing deals in the banking industry this year will turn into a blizzard during the next decade, according to a major new study of the future of U.S. banking.

The Vision 2000 study, released last week by Arthur Andersen & Co. and the Bank Administration Institute, predicted that the consolidation will cut the number of U.S. banks by 25% and could eliminate about 250,000 jobs.

Meanwhile, banks will give top priority to cutting costs, re-engineering work flows and outsourcing back-room operations, the study said. Information systems will see the greatest amount of outsourcing.

M. Arthur Gillis, president of Computer Based Solutions, Inc., a New Orleans-based IS consultancy specializing in the banking industry, agreed with the study's conclusions but said the outsourcing trend should not be overstated. "It's a consistent trend but not a growing trend,"

The industry's basic problem of overcapacity — too little revenue supporting costs that are too high — will be fixed by mergers and cost reductions from automating and streamlining operations, according to Waino H. Phil, head of the banking prac-

tice at Andersen Consulting in Chicago and a study leader.

"Consolidation and powerful information systems will provide the impetus for back offices to become much more centralized and automated, creating the potential for dramatic, rather than incremental, gains in productivity," he explained.

Midsize and small banks reported that data processing op-

### Hit list

Information systems is one of the areas bank executives cited as being a high or moderate priority for cost cutting

	Analysis over \$5B Priority	Bank size \$500M to \$5B Priority	Under \$500M Priority
Branch operations	High	High	High
Data processing	Moderate	High	High
Administration	Moderate	Moderate	High

1991 survey of 250 bank executives and experts

Source: Arthur Andersen & Co./Bank Administration Institute

CV Chart: David Greening

erations will be high on the hit list for cost-cutting efforts (see chart), which helps explain the trend toward outsourcing. However, even banks once considered too large to use service bureaus have begun to look into outsourcing, said Richard M. Sullivan, executive director

"Consumers know the difference between Wal-Mart and Macy's," Phil said, "but few retail banking customers can find any difference between the Top 100 local banks in their communities." He said banks need to "break away from the pack" through specialization.

## Slack AIX

FROM PAGE 1

a question. I'm surrounded by IBMers who don't know the answer. They have to call other people, including subcontractors, before I can get any help."

Roy Schulte, an analyst at Gartner Group, Inc. in Stamford, Conn., said, "AIX support is not up to IBM's general standards for technical support. It's catch-as-catch-can."

William J. Filip, president of IBM's Advanced Workstation Division, said IBM is taking steps to fix the problem. "I appreciate that there are many situations where you don't have all the skills you'd like. Hopefully, this will get better at a rapid pace," he told conference attendees.

Filip said that because of the rapid acceptance of the RS/6000 IBM has been running to keep up with demand. IBM is providing technical training to employees, more than 30,000 "student days" of classes were given last year, he said. This year, "we're spending twice as much time on it [as would be justified by] the

money we're making on it."

Separately, Filip talked about the low-end RS/6000 that was delayed because of I/O chip problems. The low-end machine will be sold at under \$10,000 retail. It will likely be announced during the first quarter of 1992 and will ship in volume later in the year. He said it will have half to two-thirds the performance of an RS/6000 Model 320H at half to two-thirds the price.

Filip also said that the personal workstation is "not a replacement for the 320H" and that the 320H line would continue to be sold and supported.

Filip denied rumors that the small RS/6000 was delayed because of marketing considerations that it would cut into sales of existing models, especially in Europe. He did acknowledge, however, that there would be overlap between the RS/6000 line and other IBM product families, especially the Personal System/2 personal computers and the Application System/400 midrange. But, he said, "we're less concerned about overlap than we are about having gaps in the product line."

He and other IBM executives

shared the following, yet-to-be-announced plans for AIX and the RS/6000 line:

■ The low-end RS/6000 workstations will come in two announcements. The first will be a little larger than a high-end PS/2; the second will be more comparable to an i486 PS/2.

■ The AIX operating system will be downsized in two steps to keep up with the hardware. The first version of AIX-2 will be announced later this year.

■ Multiprocessing versions of the RS/6000 and AIX will be announced probably late next year and delivered in 1993. They will support loosely coupled multiprocessing first, with tightly coupled support coming later.

■ A database management system for the RS/6000 family that would be based on Version 2.0 of the OS/2 Extended Edition database manager. The AIX version will be out next year.

■ RS/6000-based technology will show up in other IBM product lines, including on the AS/400 and PS/2 and as back-end and front-end processors for the 3090 family. Plans do not call for making the RS/6000 and AS/400 processors into one box.

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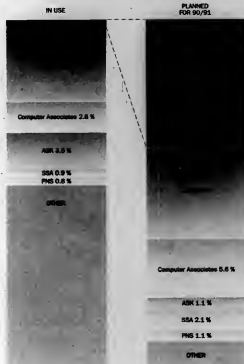
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# Lotus, Borland duke it out in copyright suit

BY ROSEMARY HAMILTON  
CW Staff

BOSTON — A routine legal step in the Lotus Development Corp. lawsuit against Borland International, Inc. turned into controversy last week when two independent parties filed briefs on copyright law with the U.S. District Court here.

The friend of the court briefs, one of which was filed by the U.S. Department of Justice on behalf of the U.S. Copyright Office and another by a group of 10 law professors, are central documents intended to assist the court in understanding copyright law, both parties claim. However,

Lotus and Borland ended up in a verbal battle over the significance of the filings.

Lotus filed suit against Borland in 1990, claiming its Quattro Pro spreadsheet software infringed on the copyright Lotus holds for its 1-2-3 software. Lotus had previously emerged the victor in three copyright infringement lawsuits, including one against Paperback Software International, Inc.

Last week's briefs were filed as Borland submitted its response to an earlier Lotus motion asking the court to resolve the lawsuit without a trial. Borland answered by claiming that Quattro Pro does not infringe on Lotus' copyright. It also

filed its own motion for summary judgment, which now means both parties agree that the case can be resolved without a trial.

Borland then maintained that the third-party briefs will bolster its case, while Lotus accused Borland of misrepresenting the legal documents.

Meanwhile, one independent observer said this controversy is likely pointless.

"The judge is not bound in any way whatsoever by friend of the court briefs," said Les Gessner, a partner at Lucash, Gessner & Updegrave, a Boston law firm specializing in computer law. Gessner said the Justice Department brief is a ge-

neric summary of copyright law and is "as neutral as to be meaningless."

The second brief was filed by 10 law professors and has more bite to it. The professors took issue with U.S. District Judge Robert Keeton's decision against Paperback.

"These are 10 leading copyright professors, and they are asserting their opinion on as to how the court ought to use traditional tenets of copyright law in the Lotus/Borland case," said Spencer Leyton, Borland's senior vice president of business development.

The professors claim the Paperback case shows that the court's interpretation of what can be protected by copyright law is too expansive.

Lotus downplayed this brief. The company said some of the professors had expressed these same opinions during the Paperback lawsuit, and those opinions were rejected by the court.

## Software tax

CONTINUED FROM PAGE 1

governing its treatment are well-established.

They also argued that the bill would slow the advancement of technology in the U.S. by inhibiting users from upgrading systems. We are "convinced the 14-year amortization period will place purchasers of software at a competitive disadvantage relative to international purchasers," said Charles Shewbridge III, assistant vice president for taxes at BellSouth Corp. Most foreign companies use a three- to five-year write-off schedule, he said.

Shewbridge said advances in communications technology require carriers to install new network software as often as every two years, so a 14-year schedule would leave useless software on balance sheets for more than a decade.

"Software is not really intangible; it does work," said Hank Willen, director of corporate information systems at Becton, Dickinson & Co. "And 14 years does not represent the real world. The useful life of most of our software is in the neighborhood of five years."

The bill would apply the 14-year write-off only to software purchased externally — either off-the-shelf, developed on a custom basis by a contractor or purchased with a corporate acquisition. Software developed internally or bundled with a hardware purchase would remain subject to current tax rules. Opponents said that is disadvantageous to small firms, which are more likely to buy than manufacture, and contractors, who would see added competition in in-house development.

A congressional source said the bill is likely to win House approval but may not come to a vote this year. He said Rep. Dan Rostenkowski (D-Ill.), the bill's sponsor and chair of the Ways and Means Committee, would prefer to introduce the bill in 1992, an election year, with a popular "seam" attached, such as tax relief for middle-income Americans. He said the final bill would probably exempt packaged PC software from the slow write-off.

While the Bush administration opposes having different write-off schedules for different assets, Assistant Treasury Secretary Kenneth W. Gideon conceded that the tax revision should not apply to commercial nonlicensed software such as word processing packages.



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## Microprocessor market heats up with new chips

BY JIM NASH  
CW STAFF

Chips and Technologies, Inc. ran out a line of seven new processors for viewing last week. Among them were four 80386-compatible chips. Collectively called Super386, the semiconductors are Chips and Technologies' first foray into the microprocessor market dominated by Intel Corp. and Advanced Micro Devices, Inc.

The San Jose, Calif.-based company also announced shipping dates for a pair of math coprocessors and a palmtop-based chip called the PC/Chip.

Tom Thornhill, an analyst at Montgomery Securities in San Francisco, said Chips and Technologies' 38605SX and 38606DX chips are significant because they have a 512K-byte memory cache that helps boost their performance. Chips and Technologies claims performance increases of up to 40% over similar Intel chips.

However, adding the cache makes the machines incompati-

ble with existing sockets used by personal computer makers designing boxes around traditional Intel and Intel-compatible CPUs, Thornhill said.

### Plans at work

For Milpitas, Calif.-based PC maker Twinhead Corp., at least the new socket is not a serious detriment to purchasing the microprocessors, a spokesman said. He explained that the company is already planning to display a PC running on the faster Chips and Technologies chips. There are no plans to use them in production yet, he said.

The 38605SX and 38606DX are pin-compatible with Intel chips. The company said they offer a 10% performance increase over comparable devices.

Both sets of SX chips will come in 16-, 20- and 25-MHz varieties and are scheduled to ship during the second calendar quarter of 1992. The DX chips are expected to ship during the first quarter and will have clock speeds of 20, 25, 33 and 40 MHz.

## First pen-based laptop to show

BY JAMES DALY  
CW STAFF

MOUNTAIN VIEW, Calif. — Momenta Corp. said it would enter the burgeoning pen-based personal computer market today with a decidedly different twist: a lightweight laptop that integrates handwriting recognition capabilities with the functions of a traditional portable machine.

Analysts said the dual functionality of the 6-pound "pentop" computer could popularize pen-based systems far more readily than current tablet-only models from Grid Systems Corp. and NCR Corp.

"The pentop machine will change the way people think about mobile computers," said Bill Lempen, publisher of the Pleasanton, Calif.-based "Penview News." Lempen predicted that worldwide sales of pentops will reach 8.1 million units by 1995, surpassing sales of laptops and notebooks.

Momenta is the first of what

is expected to be a group of vendors releasing pentops. Using a proprietary operating system, will allow the firm to begin shipping in volume by next month rather than waiting for the arrival of Microsoft Corp.'s Windows for Pen Computing or Go Corp.'s

ly on the flat-panel screen or as a traditional laptop computer that uses an attachable keyboard.

"People have always had to shape their work around the requirements of the computer, but we decided to build a machine that conforms to the needs of the

person," Elshian said. The machine offsets the need for a mouse through the use of the on-screen Command Compass. To alter a block of text or a graphic, a user touches the pen to the screen to produce the circular commands. Commands are entered when users stroke the pen in specified directions.

The \$4,995 machine is based on Intel Corp.'s 20-MHz 80386SX chip

and includes a spreadsheet from Penware, Inc. in San Jose, Calif., as well as a word processor and presentation graphics program from Momenta. It also includes a built-in fax and data modem.

The pentop is equipped with 4M bytes of random-access memory and a 40M-byte hard disk.



Momenta's "pentop" can be used with either an electronic stylus or a traditional keyboard.

Penpoint operating systems.

Momenta also recognizes both DOS and Windows-based software and will work with Windows for Pen when it arrives later this year, Momenta President Kamran Elshian said.

Momenta can function either as a pen computer that uses an electronic stylus to write direct-

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## Du Pont replaces IS exec

BY CLYTON WILDER  
CW STAFF

WILMINGTON, Del. — In a move related to its massive cost-reduction plans, Du Pont Co. became the latest corporation to place an executive without direct information systems management experience in the top IS position.

Du Pont announced that Michael B. Emery, senior vice president of engineering, will take on the additional responsibility of senior vice president of IS when veteran IS chief Raymond E. Cairns Jr. retires at the end of the year. Emery was

chosen to forge closer ties between IS and the business units, IS managers said, but he has also been a cost-cutting leader in the engineering function.

Earlier this year, Du Pont Chairman Edgar Woodard announced a plan for the \$40 billion firm to cut \$1 billion in costs annually in its chemicals and specialty products businesses.

Cairns' retirement plans were already in the works and were not affected by the cost-reduction plans, said Ed Mahler, manager of decision support in Du Pont's IS department. Cairns, a 29-year Du Pont veteran, will turn 59 in December and

wants to spend more time with his family, sources said.

"He is truly retiring," Mahler said. "He is a close personal friend and mentor, and he will be missed, but I'm cheering for him going on to new things." Cairns could not be reached for comment last week.

Emery, 53, has been with the company for 30 years in the engineering and business management positions.

"Mike is the right person for IS at this time," said James Collins, manager of Du Pont's Open Systems Program Office. "He has a breadth of business experience and very strong relations



Du Pont's Collins retires after 29 years in IS

with the corporate operating group."

Du Pont is one of several large corporations this year that have replaced a premier member of the "old guard" — more technology-oriented IS executives such as Cairns, Merrill Lynch & Co.'s DuWayne Peterson and Mellon Bank Corp.'s George D'Nardo — with a new IS chief from the business side. Collins pointed out, however, that Emery's engineering background fits with the IS culture.

Collins noted that Emery acted as corporate sponsor of a Digital Equipment Corp. All-In-1 office systems implementation when he was director of a Du Pont fibers unit in the early 1980s.

Emery could not be reached for comment.

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## IBM printer line gets revamped

BY CAROL HILDEBRAND  
CW STAFF

The independent printer group recently spun off from IBM trained its sights on Hewlett-Packard Co. with a comprehensive printer announcement complete with connectivity that will support almost any device short of a toaster oven.

"They've kind of surpassed all the standards that HP has set," said Marc Boer, an industry analyst at BIS Strategic Decisions in Norwell, Mass.

Citing the high-resolution features, Bill Gott, an analyst at Computer Intelligence/Infocorp, said, "I think they have really done their homework in terms of incorporating the functionality that users in an office environment really need in a printer."

Lexmark International, Inc. announced the 4029 series of four laser printers with a number of enhancements and options available across the board.

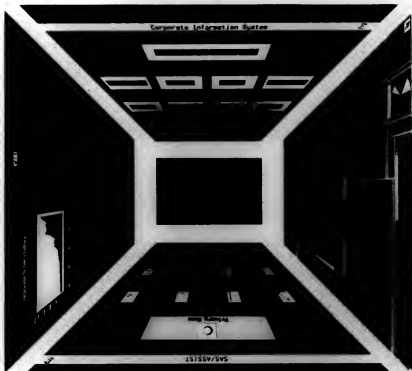
### The leading option

Among the most strategic additions were the built-in Adobe Type Manager rasterizer and Type 1 scalable fonts from Adobe Systems, Inc. Users can rasterize the fonts — convert a digital image into a bit-mapped one — without the need for expensive Postscript.

Another big feature is Lexmark's Print Quality Enhancement Technology. Similar to HP's Resolution Enhancement, it adjusts toner dot size to help mend down jagged corners on text and graphics. Three of the four printers offer 600 dots/in. resolution. The combination of the three will have a serious impact on the competition, particularly HP, Computer Intelligence/Infocorp noted.

The printers' high-resolution abilities should be of interest to users with desktop publishing needs, Gott said, particularly when coupled with the printers' connectivity features. Apple Computer, Inc.'s AppleTalk will be an option on the new products, with availability scheduled for November.

"By offering the AppleTalk interface, IBM has legitimized the 600 dots/in. option," according to a special report on the announcement from BIS.



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## ADVANCED TECHNOLOGY

## TECH TALK

## New neural chip in sight

■ Mitsubishi Electric Corp. in Osaka, Japan, said recently that it has conducted a successful test of an optical neural chip that stored knowledge it acquired independently. It also processed several problems simultaneously and stored the answers, a procedure different from conventional computers, which tackle one problem at a time. The new chip is reportedly capable of processing information 2,000 times faster than a small-size computer but is still years from commercial use, company officials said. The neural chip will be part of a neural network that mimics the functions of the human brain and communication.

## Flat, light and slim

■ Toshiba Corp. has introduced a flat-panel LCD that it claimed is the lightest and slimmest in the world. The LCD weighs only 320 grams and measures 169-by-251-by-6.5mm. The company has already begun manufacturing the displays and soon expects to make about 10,000 units a month, a spokesman said. The LCD supports IBM Video Graphics Array specifications with a 3 million-pixel display. It uses fluorescent side lighting to improve screen readability.

## Smart card for cars

■ AT&T and Nipponenso Co. have signed a pact to further develop smart-card technology. Smart cards are about the same size as credit cards and contain microprocessors. AT&T, which makes the cards, and Nipponenso, which makes card readers, have signed an agreement for Nipponenso to develop new smart-card applications. One proposed application is that Nipponenso, part of the Japanese conglomerate that also makes Toyota cars, will develop a smart card installed in a glove compartment that would be used to track auto maintenance and repairs.

## Creating computers with carbon

Buckyballs may have practical applications in computer technology, research shows

BY JEAN S. BOZMAN  
OF TIME

**T**he naked eye, carbon-60 molecules appear to be nothing more than black soot. But under a microscope, scientists see what they think could be the raw material for the electronic circuits and computers of the future.

The soccer ball-shaped carbon-60 molecules or buckminsterfullerenes — for their resemblance to the geodesic domes designed by Buckminster Fuller — were once thought to exist only in space as interstellar dust. Scientists first thought that carbon-60 molecules, or "bucky balls," would never be more than a curious scientific phenomenon. Then a year ago, Donald Huffman, a University of Arizona physicist, and Wolfgang Kratschmer of Germany's Max Planck Institute for Nuclear Physics found the starting gun in a race to exploit the material. The two described in the Sept. 27, 1990, issue of *Nature* how bucky balls could be easily mass-produced in laboratories.

Suddenly, it seemed that thinking about computer applications was not all that farfetched. "They would lend themselves marvelously to electronics applications," Huffman said of the bucky balls. "You could easily make things that are on the scale of integrated circuits and use them as superconducting switches."

Early experiments indicated that bucky balls might prove useful as thin insulating layers in computer chips or as components of low-temperature superconducting circuits. Bucky balls can be arranged into layers that are only

one nanometer in diameter — a thousand times smaller than the thinnest silicon materials used in integrated circuits.

Now that bucky balls are available for experimentation, computer applications, while several years away, seem



Carbon-60 molecules could be used for superconductivity technology

within reach. "Carbon-60 is soluble, so you can do lithography with it," said Rudaman Malhotra, a senior chemist at SRI International in Menlo Park, Calif., who is working to define bucky ball properties. "It can be made into a superconducting material, so you could make integrated circuits with it. And, it gets excited by light, so you could use it for optical applications."

The University of Southern California in Los Angeles, the University of California at Santa Barbara, AT&T Bell Laboratories in Murray Hill, N.J., and

IBM in San Jose, Calif., are also looking for unknown properties and for computer applications.

The dynamics of the interactions between bucky balls and other atoms — a new form of chemistry — is being studied at IBM's Almaden Research Center in San Jose. One purpose of the IBM study is to slow the spinning of the tiny spheres down by cooling them to the temperature of liquid nitrogen — roughly minus 200 degrees Celsius.

"The idea is that if you cool them down, you can see how they are packed on the surface," said Robert Johnson, an IBM researcher at the Almaden facility. At room temperature, the bucky ball spheres spin at 20 billion revolutions per second. "If you heat the carbon powder up, they start spinning faster and faster, and some of them take off into the gas," Johnson said. "But if they hit a gold surface that's cold, they'll stop, and you can take pictures of them." IBM researchers have done just that, publishing photographs of one-layer-thick films made out of bucky balls.

Carbon-60 molecules' optical properties are also intriguing researchers. Malhotra said. Some experiments have found that bucky balls react quickly to light — doubling its intensity in some cases. A layer of bucky balls can change the frequency of light that passes through it, causing red light to turn blue, for example. Such optical properties could have applications in compact disc/read-only memory technology, Malhotra said.

Another area of exploration is to determine whether three-dimensional arrays of bucky balls could store data or images for retrieval by computers.

## Bucky ball rolling with mass production

**A** buckminsterfullerene, the designer of geodesic domes, has 60 carbon atoms, arranged in 12 pentagons, and looks like a soccer ball. These curious molecules can be arranged in layers only one-thousandth of a micron in thickness. As such, they may form the basis for a new era in materials science.

"We proved that there's now a third crystalline form of carbon, besides diamond and graphite," explained Donald Huffman, a University of Arizona physicist. Working with Wolfgang Kratschmer of Germany's Max Planck Institute for Nuclear Physics, Huffman showed other scientists how to create carbon-60 in mass quantities in the laboratory in 1990.

The cost of making "bucky balls" is relatively low, provided you have a vat of liquid helium. First, graphite is burned with a blowtorch in an atmosphere of helium. Then, the soot is dissolved in a

mixture of toluene, a common solvent. If the color is a deep purple, then the flask holds nearly pure carbon-60 molecules. If it is a deep red color, then some carbon-70 molecules are dissolved. When dried, the bucky balls form a blackish powder that is stable at room temperature.

The discovery that bucky balls could be mass-produced unleashed a frenzy of scientific activity in 1991, as hundreds of scientists worldwide tried to find new properties of the newly available carbon-60 material. The first finding — superconductivity — came right away and was published in a scientific paper in April, 1991.

"Once we showed that you could produce a thin film of this new form of carbon, scientists at Bell Labs found that you could 'dope' these films with a little bit of potassium and turn them into a superconducting material," Huffman said.

JEAN S. BOZMAN

Bucky balls' minuscule open doors in science



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## EDITORIAL

## Afterthoughts

**A**t a big PC conference last month, some 300 industry executives and developers were asked to weigh in on the following question: "Who will benefit the most from the IBM/Apple alliance?" It was a multiple choice question, and the choices were IBM, Apple, Microsoft and Borland.

From the back of the room came a lone, inquiring voice asking, "What about the customer?"

As an afterthought, the customer was added to the list of choices. No matter. The customer finished dead last anyway.

With the IBM/Apple alliance inked last week [CW, Sept. 30], the customer again will be treated to a vision of the future in which the face of computing is changed, perhaps radically so.

This particular vision includes multiuser hardware offerings that are more similar to one another than dissimilar. There is Unix-based software that will run on anything from a PC to a high-performance workstation to a General Electric toaster oven. There is standards-based multimedia for the masses (who knows what we'll do with it?) — all based on an agreement that will have two different companies cooperating like newlyweds in the morning and then butting heads selling hardware against one another in the afternoon.

Along the way, the alliance will seek to break the Intel/Microsoft duopoly in microprocessors and operating systems and bring a new standard to bear on the marketplace.

It's getting so you almost need a computer just to keep score on the number of aggressive standards-creating efforts under way in the vendor community today. But which computer to use? Running what standard software?

We try hard to dampen the inclination to be cynical. But if these various consortia and alliances bothered to ask the customers what they think, the vendors would find a growing cynicism and skepticism befitting the confusion vendors are sowing.

What does the cynic think of the IBM/Apple "Purple Alliance"? For one thing, the cynic will question IBM's ability to fashion and deliver a next-generation operating system when the development of OS/2 is stuck in mud. The cynic will question Apple's ability to lead development of next-generation hardware when it has been precisely Apple's inability to bring an innovative follow-on to the Macintosh that has stymied its performance in the corporate market.

And then there's the matter of getting hundreds of third-party software developers to commit limited research and development funds to support the promise of the next generation of desktop computing. As Steve Jobs and his Next company discovered, it can be mighty lonely in the market without a lot of this support.

The good news is that the first deliverables of the alliance will be enhanced Apple-to-IBM connectivity. That is pragmatic and user-driven. Beyond that, we have to ask, "What about the customer?"



## LETTERS TO THE EDITOR

## Join the club

In your article "Maintaining staff knowledge in frugal times" [CW, Sept. 9], you described a problem that is clearly plaguing the entire industry. There was one cost-effective remedy not mentioned in the article but worth considering.

In almost every metropolitan area, there are numerous professional organizations represented by local chapters. For the cost of annual dues and perhaps one meal a month, they offer opportunities for professionals to exchange experiences and ideas with peers from many sectors of the industry and to form valuable networks.

Employees can also gain valuable leadership experience at the local, regional, national and perhaps international levels. Many organizations also have timely speakers and low-cost seminars that present the latest trends and developments within the industry.

There are many reasons to join and support professional organizations, and in these times of lean training budgets, employers should strongly consider making this a priority.

**John L. Horton**  
Certified data processor  
Data Processing  
Management Association  
Salt Lake City

## Buyer beware

Unlike in years past when consulting firms were willing to maintain an "inventory" of consultants with the expectation that their marketing staffs would be able to locate suitable assignments, fewer consulting organizations now have the money to

have a nonbillable employee on staff for any length of time.

Jan Daugherty's article "Consulting: Research before you commit" [CW, Sept. 16] reminding people to ask questions before committing to joining a consulting firm, missed one of the most important questions a prospective employee needs to ask: How long will the consulting firm keep me on the payroll if I am between assignments (or "on the beach")?

The answer has little to do with your performance but with your marketability at the time your assignment ends.

If the answer is scary or sounds fuzzy, don't sign on.  
**Jeff Altman**  
Vice president  
Executive Directions, Inc.  
New York

## Prime concerns

I am responding to the small clip titled "Reply to hit Prime Info" in your Inside Lines column [CW, Sept. 16].

Prime Computer, Inc. has trimmed its sales and marketing force on par with other computer companies that sell and support minicomputer systems. Regardless, our focus is still and will always be on the customer. Prime's dual-rail strategy is progressing on schedule. Dual-rail is a hardware development plan that is providing our customers with enhanced 50 Series systems as well as industry-standard Unix-based reduced instruction set computing systems. Migration tools to port applications among hardware platforms are currently being developed.

While Prime's focus has always been on price/perfor-

mance, we are placing additional emphasis on developing improved redundant power supplies, disk mirroring and greater serviceability.

**Dave Fernald**  
Vice president  
Sales and marketing  
Prime Computer, Inc.  
Natick, Mass.

## DG supporter

Regarding "Symmetric multiprocessing comes to PCs" [CW, Sept. 23], the following statement was made: "Below the mainstream level, virtually no operating systems take advantage of more than one processor..."

For the past two years, I have been supplying my customers with true symmetric multiprocessing Data General Corporation. The entry-level server machine costs less than \$10,000 and runs at 23 million instructions per second (MIPS), upgradeable to 46 MIPS with a second processor installed. DG's highest-end servers go from 25 MIPS to 116 MIPS with four processors.

Additionally, after 12 years of using and developing under various brands of Unix, DG/UX is the best I have seen.

**Alan Moss**  
Workstations Products  
and Services, Inc.  
New York

Computerworld welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Labriola, Editor in Chief, Computerworld, P.O. Box 9171, 375 Cochise Road, Framingham, Mass. 01701. Fax number: (508) 875-8931; MCI Mail: COMPUTERWORLD. Please include a phone number for verification.

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**Primary research**

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**20. Chief Information Officer/Vice President/Head of Information Systems**  
 21. Asst. Dir. MIS Services, Information Center  
 22. Dir. Adv. Tech. Planning, Admin. Serv. Contr. Ctr.  
 23. Network Sys. Mgmt. Of Asst. PC Resources  
 24. Asst. Dir. Sys. Development, Sys. Architecture  
 25. Mgr., Super. of Programming, Software Dev.  
 26. Programmers, Software Developers  
 27. Sys. Managers/Vice Presidents Mgt.  
**OTHER CURRENT ASSIGNMENT(S)**  
 15. President, Director/Partner, General Mgt.  
 16. President, General Mgt.  
 17. President, Controller, Property Officer  
 18. Engineering, Scientific, R&D, Tech. Mgt.  
 19. Sales & Mktg. Management



**QUESTION: Which of the following is not a type of equipment with which you are personally familiar?**

A. Mainframe Computers  
B. Microcomputers  
C. Supercomputers  
D. Local Area Networks  
E. All Computer Equipment

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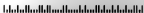
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# Addiction is our problem, too

CHARLES C. WARGA JR.



With revenue growth flat and profits at all but a handful of companies way down, there's something that's going up in the computer industry? The answer is yes, but it's no cause for rejoicing. What's on the rise in our industry, as everywhere, is substance abuse.

All across the country, the impact of drug and alcohol addiction has been felt at every level from executive manager to computer programmer, systems analyst and service technician.

## Mounting costs

In a recent conversation, one Fortune 100 IS executive described his division's experience with the following problem: "Out of a total of about 100 staff, we usually have about 3% at any one time who are at or near their personal bottom. One of our people is in rehab now and two more are about to go in."

The combined economic cost of alcohol and drug abuse to all industries was recently estimated to be at least \$175 billion. An additional \$135 billion can be added to that for lost productivity. For the computer industry, this translates to approximately \$2 billion in economic cost and \$1.5 billion in lost productivity.

Of the estimated 2 million people employed within all sectors of the computer industry, there are approximately 170,000 alcoholics. And although no one is quite sure of the numbers, the population of drug abusers is probably somewhere in the same vicinity. Using our own industry estimates of average revenue per employee, each

of these addicts costs the industry roughly \$79,000 per year just in terms of output not delivered.

**Environmental impact**  
Furthermore, people in active addiction — and early recovery — adversely affect those around them. Families feel the strongest impact, but co-workers are also affected, sometimes to the point where their productivity also suffers.

What does this mean to you and me? It means dysfunctional workers, derailed projects, hob-

also the human toll: the waste of talent and lives. Only 4% of all chemically dependent people get into recovery. Of these, 1% will probably relapse. The remaining 99% will die in active addiction.

So what's to be done? Basically, we need to increase our understanding that this is not a moral issue, not a legal issue, not even an ethical issue, but a medical problem that responds best to early intervention through something like an Employee Assistance Program.

The next time you're at a computer industry conference, a



David Pike

bled organizations and costly downtime at a point when we can least afford it. It can also mean increased risk of monetary losses due to fraud and theft, if the substance abuser must steal to support an out-of-control habit, or due to careless, damage-causing errors.

But the total cost of this disease can be measured in more than dollars and cents. There is

financial analysts' meeting or a new product announcement and the booze is flowing, lost around you and consider the real cost of addiction. When systems crash, they can usually be brought around — check, reset, reagent, restart. When people crash, they can die.

Warga is an independent consultant in Princeton, N.J.

# Licensing bill is a tax package in disguise

## READER'S PLATFORM

HARRY A. COZZI

On June 27, without benefit of public hearings, the New Jersey state assembly passed a piece of proposed legislation that seeks to require licensing of software designers in New Jersey by a soon-to-be-created State Board of Software Designers. This bill — Assembly Bill A-4414 — should not be viewed as something that applies only to computer consultants or as strictly a New Jersey issue.

It encompasses those who design, program, test, modify, maintain or document software — whether consulting employee or nonconsulting employee, contract programmer or independent consultant. Those living outside of New Jersey but working in the state are not excluded, nor are firms located out of state but selling products and services in New Jersey.

The New York/New Jersey Independent Computer Consultants Association (ICCA) has made a concerted effort to shield other professionals and the general public regarding this bill. Several professional associations and numerous user groups in New York and New Jersey have joined the ICCA in opposing the bill's passage.

To the best of my knowledge, no major professional groups or corporations have expressed positions favoring this bill. The press has quoted individuals favoring A-4414; however, I would caution legislators to remember that these individuals do not speak for the industry. Upon closer scrutiny, they will

probably discover that such individuals fall into one of three categories: those seeking appointment to the nine-member board that A-4414 would create; those promoting and/or providing data processing-related examinations; and those seeking economic advantage by restricting or limiting competition.

Although the purported motivation for this bill is consumer protection, there has been no public outcry for protection from data processing professionals. More importantly, the passage of this bill would offer consumers no greater protection than they already have. A-4414 is not a consumer protection bill. It is, at best, a tax bill with a great many negative side effects.

Any attempt to license data processing professionals by administering written examinations in the hope of "weeding out" those who may be unscrupulous or incompetent is doomed to failure for at least two major reasons. First, this is a field that is very diverse and is changing at lightning speed. As a result, the value of one individual over another is the concentrated and specific knowledge he possesses. Under these circumstances, it's hard to believe that any board could construct a totally fair and accurate test of who can practice "software design."

Second, you can't test for ethics. There can be no assurance that because someone has passed an exam and been licensed, he will behave ethically.

Cozzi is president of a Middletown, N.J., consulting firm. He also chairs a committee for the ICCA's New York/New Jersey chapter.

# What would you do if your hard disk failed today?

CHARLES F. LECHT



Did you experience a sudden crash when you read that headline? Most people really aren't prepared for hard disk failure.

Some do have their data backed up on floppies, of course, but many do not. And even when this precaution has been taken, the floppies are usually in a state of disarray, with many versions of the same documents, cryptic file names, mystifying labels, bad dating and so forth.

I bring up this subject because I'm a victim myself. Last month, my hard disk controller crashed, obliterating the data on my hard disk. Much of it wasn't backed

up, and what was existed in the kind of disarray described above.

Luckily, my disk didn't fail, and a lot of what was on it wasn't worth saving. Still, the failure did start me wondering about what practical recovery options are available for users who might have more to lose if they suffered something like a 314M-byte crash — really practical options as opposed to the wholesale use of floppies.

I know, if you have 314M bytes of hard disk, you aren't using 5¼-in. floppies. You are probably using those 1.44M-byte 3½-in. types. Even so, for a 314M-byte hard disk, you need 221 of them to back up a full disk.

No reasonable person can be expected to manage that many floppies without error, and no reasonable person would feel

fully confident that none of that large a number would fail. So to increase the probability of success in restoring data to another hard disk when your current hard disk fails, you really should make two backup copies. In case you're not lost, that means 442 3½-in. floppies to keep labeled and current. You could use another computer to do this, but then you'd have to back up its hard disk, too.

Granted, you could use one of those fancy data-compression programs to drastically reduce the number of floppies, but you'll be dependent upon that program to unpack the data.

One alternative to floppy storage is an auxiliary hard disk. Of course, if you are operating at nearly full capacity on the primary hard disk, only the latest back-

up may be kept this way. Since the volume of data you wish to keep on record may be larger than the capacity of one hard disk, you may need multiple hard disks to maintain it.

Even if only one auxiliary hard disk is involved, keeping a perfect record of what's on the primary hard disk or an auxiliary hard disk by constantly copying Disk A to Disk B is beyond the capabilities of most normal people. In fact, when most people have two hard disks to use, they invariably end up using them for different purposes.

Of course, what we'd all really like would be for manufacturers to make desktop and laptop units with automatic mirror-disk facilities. The problem is that supporting a mirror disk would increase the cost of a desktop

machine by as much as 50%.

You may wonder why I haven't said anything about the 135M-byte optical disk memories available for most PCs. The reason is that I'm leery of this alternative. Optical technology is changing very rapidly. What assurance do we have that these disks, or even the devices to read them, will be available in a few years? Then there's the issue of reliability. Think of how frequently your CD player fails to appreciate the possible inherent unreliability in this technology. We can overlook missing a little Moment now and then, but, well, you know what I mean.

All in all, the best thing we can do is hope that large-capacity card memories soon become practical enough to make rotating disk devices obsolete.

Lecht is an IDC News Service design correspondent based in Tokyo.

When an office doesn't work, it's a people issue, right?  
When productivity fails, it's a people problem, right?  
Well, let's see how wise that bit of conventional wisdom is.  
As a nation, for the past 15 years we've been throwing  
people at the problem of office productivity.  
Of the more than 116,000,000 Americans who are work-  
ing today, almost 58% of them are white-collar office workers.

# OFFICES THAT WORK.

And since 1976, the number of  
people who work in offices has grown  
twice as fast as other segments of  
the workforce.

So has it worked? Have more  
people meant more productivity?

Since 1976, the U.S. has trailed  
virtually all industrialized countries in produc-  
tivity growth.

White collar productivity rose less than 1%  
per year during the 1980s.

And in 1989 and 1990, it actually declined.

Clearly, throwing more people, or differ-  
ent people, at the problem doesn't solve it.  
But something else does. Something  
unconventional.

There are dozens upon dozens of  
enterprises—companies, government  
agencies and universities—which

have made dramatic gains with essentially the same people  
working in their offices and departments.

In the credit card division of a major financial institution,  
customer service response time was slashed from as long as  
four days to just minutes.

In the accounts payable department of a leading con-  
sumer products company, the time it took to file in-coming  
checks, invoices and requisitions went from a two-to-three-  
month backlog to instantaneous filing the moment they arrive.

And, the corporate legal department of an aerospace firm  
realized a 60% reduction in trial preparation costs.

So what changed? What made these offices work, when  
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WANG



# SYSTEMS & SOFTWARE

## NEW DEALS Unisys still at State

Unisys Corp.'s government systems subsidiary has renewed a professional services contract with the U.S. Department of State's Office of Foreign Missions (OFM) to provide service, software and hardware. Unisys has been under contract with OFM since 1986. The potential value of the contract, with options for three one-year renewals, is \$10 million.

The Unilever Group of Cos. in India has chosen Digital Equipment Corp.'s India office as its major information technology partner in a nationwide computerization program. The agreement could be worth \$12.5 million over the next five years, DEC officials said. The program will be India's largest commercial computing endeavor to date, eventually connecting Unilever's India head offices in Bombay and Bangalore with 76 factories, 40 branch offices and more than 2,000 distribution centers.

The National Cancer Institute has installed an eight-processor Cray Y-MP system, the largest system offered by Cray Research, Inc., for biomedical research. The new system was installed at the institute's Frederick Cancer Research and Development Center in Frederick, Md.

## Prime's dim future leaves users leery

BY SALLY CUSACK  
CW STAFF

FRAMINGHAM, Mass. — A recent round of layoffs at the financially faltering Prime Computer, Inc. has left many users unsure of the minicomputer maker's ability to survive.

"Right now, we are nervous," said Michael O'Rear, director of operations at the University of Southern California at Los Angeles. The university has 14 of Prime's proprietary 50 series computers running financial and administrative applications.

O'Rear said he is 100% behind Prime's products, particularly the information database

software, and has always enjoyed excellent service and support.

However, USC will be looking to upgrade or purchase a new machine within the next 12 months, and right now it will not commit to Prime or any other vendor. "I'm sitting on my money," O'Rear said.

Prime has cut more than 800 people from its work force since the beginning of the year and plans to lay off an additional 900 out of the current total of 7,300 employees by the end of 1991.

Eric Atanda, manager of telecommunications at Hammann Corp. in Bridgewater, N.J., and a longtime Prime customer, said

the company has put upgrade purchase plans on hold while evaluating the situation.

Having considered both 50 series and the Unix-based EXL line of computers from Prime, Atanda pointed out that the vendor is still fairly new in the Unix world and is largely unproven.

Prime's financial viability is also a concern, he said.

Another heavily invested Prime user, Bruce Kerns, director of MIS at Alumnus, Inc. in Norcross, Ga., observed that the recession has caused Prime unexpected problems this year. He is concerned that the latest round of layoffs will have an effect on projects currently being researched and developed.

Prime is still touting what it calls a dual-rail strategy as the solution for migrating proprietary users to Prime Unix-based EXL boxes. Dual rail is the ven-

der's intent to enhance the 50 series for existing customers until they are ready to migrate to an open environment on the EXL. This will allow customers to keep their Prime Information

**I HAVE JUST BET my job on my belief that the field is sized correctly for our level of business over the next three years."**

NEIL MCMULLAN  
PRIME

software investment intact.

However, many users are delaying upgrade plans or leaving the product line altogether. *Continued on page 32*

## VAX 6000 tops list in user satisfaction poll

BY KIM S. NASH  
CW STAFF

DELRAN, N.J. — Upgradeability and reliability helped the VAX 6000 beat the rest of the midrange systems market, according to a recent user survey by Datapro Information Services Group.

The DEC line edged out last year's winner — Hewlett-Packard Co.'s 3000 series — for the top spot, said Judy Watson, product manager at Datapro, which is based here. The VAX 6000 moved up in the ranks this year after finishing third last year.

Users gave the VAX 6000 high marks for upgrade capabili-

ty and system reliability, said Watson, who designed the annual Midrange Honor Roll survey. Datapro canvassed 5,000 U.S. sites, which were chosen at random from a database of midrange users at Computer Intelligence/InfoCorp. The response rate was 13%, or 650.

This year's ratings were close (see chart) because midrange systems are well-entrenched in the market and because of the "seller's enhancement" vendors have made over the years, Watson explained.

Additionally, the survey unearthed user indecision about how to recognize centralized operations. About three-quarters

of the respondents said they now have centralized computing operations, while just 38% will be centralized in another year. However, when asked what alternative setups they will be moving to, a few people indicated definite plans for client/server or distributed solutions, but the majority left the question blank.

Overall, users seem pleased with their vendors, with 85% saying they have no plans to switch suppliers within the next 12 months, the survey found.

The HP 3000 was a special merit award for the superior grades users gave it for service and support. Users particularly liked HP's service, troubleshooting capabilities and respon-

siveness, according to Watson. Last year, the HP 3000 Model 70 took first place, and another HP 3000 model tied with the Data General Corp. MV series for second.

### By a nose

Digital Equipment Corp.'s VAX 6000 beat out the HP 3000 for top honors in Datapro's midrange systems user satisfaction survey



System	Overall satisfaction rating
DEC VAX 6000	4.34
HP 3000 series	4.29
IBM AS/400	4.31
IBM System/36	4.15
DEC VAX 8000	4.13
DEC Microvax	4.13
PRIME 50 Series	4.00

\* Systems shared from 1 to 5, with 5 the best.

\* To be ranked, systems had to score above 3 in all 10 user satisfaction categories.

Source: Datapro Research Corp. CW Chart: Janet Coleman

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# Bell Atlantic plans \$1B switch to Systems 2000

## ON SITE

BY GARY L. ANTHES  
CIVILIAN

ARLINGTON, Va. — When Bell Atlantic Corp. thinks new systems, it thinks big.

The communications firm is

tions are real whoppers, such as the \$130 million systems that will revolutionize 6,500 users' jobs.

Rather than automating activities and enhancing them over time, Bell Atlantic is among a growing number of long-established enterprises convinced that re-engineering the underlying business functions will provide the big payoff in the future.

Joseph T. Ambrosy, vice president of information systems, estimated that simply upgrading older technology would have improved efficiency by only 10%.

Under the banner of Systems 2000, Bell Atlantic will move away from an IBM mainframe-centered architecture — the company has 30 at six data centers, surrounded by tens of thousands of dumb terminals — in a shift toward open systems. That shift encompasses peer-to-peer computing and workstations on wide-

local-area networks, using the mainframes as corporate file servers. LAN-based Unix workstations and servers will tie into the 45M bit/sec. Bell Atlantic Internet backbone, which will link the MVS-based data centers.

A key part of the plan is to separate data, applications and users into three distinct layers so applications can access data in standard ways and users can access applications without having to understand the idiosyncrasies of multiple systems.

The challenge of doing such a fundamental overhaul is compounded by the fact that Bell Atlantic, one of the seven Baby Bells spawned by the AT&T divestiture, was originally seven different telephone companies. "We have at least three of everything," said Harry Arts, director of IS and strategic planning. "Systems 2000 is to get us to just one of each system."



Ambrosy: Reduced maintenance costs by 20%

Bell Atlantic split the functions to be re-engineered into three groups: those supporting residential and small businesses; large businesses; and long-distance carriers that attach to Bell Atlantic's local networks.

For residential and small businesses, the firm will rebuild its business practices and the systems that support them to allow customers to order and receive

services 24 hours a day — through a single point of contact or, in some cases, via voice-response systems.

As the basis of these capabilities will be the Sales Service Negotiation System (SSNS). The SSNS is intended to move Bell Atlantic away from the mindset that phone companies tell customers what to buy and toward a competitive environment where buyers are given what they want and need (see story this page).

The estimated \$1 billion price tag for Systems 2000 is in addition to Bell Atlantic's existing \$650 million annual outlay for IS, but the company hopes to pick up some of the needed funds from cost savings. Arts said he is looking for "white chips" — savings from the elimination or merging of similar processes. "We're leaving no rock unturned. We're spending millions of dollars on redundant systems and data."

Arts said Bell Atlantic is also looking for "home runs" — short-term actions that provide big paybacks while long-term solutions are being sought. For example, a recent two-month study of order processing turned up a way to significantly reduce processing time and cost through better manual methods.

Bell Atlantic is also tending development using savings from lowered software maintenance costs. Ambrosy said the firm has reduced maintenance costs by 20% by using development methodologies and computer-aided software engineering.

Ambrosy said it is not yet clear exactly how much Systems 2000 will cost or even how it will be funded. He noted that Bell Atlantic has some 6,000 IS projects ongoing at any time, and some of those will have to be eliminated or put on hold.

## May I take your order?

When one of Bell Atlantic's 12.8 million customers calls in to one of the company's 169 business offices for a new service, he can expect a 20-minute question-and-answer session. During that time, one of 6,500 service representatives is probably thumbing through huge manuals looking for price, technical specifications or other information while logging on to multiple user-hostile, mainframe-based systems.

That order taker's job will get harder as the number of Bell Atlantic's services explodes over the next few years, said Robert A. Gardner, director of sales service negotiations. "We are right on the verge of much more complex order taking."

Bell Atlantic hopes the answer to that challenge lies in replacing the 1970s-era

hodgepodge of service-order systems with the SSNS, which will substitute intelligent networked workstations for dumb terminals, on-line databases for paper documents, English language commands and responses for arcane system codes and artificial intelligence for much of the human judgment currently required.

Gardner said Bell Atlantic now sends order takers 19 million pages of documentation annually. With the SSNS, those updates will be done electronically.

Bringing up the SSNS will take several hundred people five years, and cost will be between \$70 million and \$130 million, of which 40% will be for software and 60% for hardware, Bell Atlantic officials estimated. It will have these major components:

- 8,000 Sun Microsystems, Inc. Unix-based workstations, on LANs at 169 business offices.

ness offices.

- Support software in conversational English running on an IBM 3090 mainframe under MVS and on Sun servers will prompt the order taker to ask questions based on customer requests and responses.

- An expert knowledge-based sales tool to help order takers match available services and options with customer profiles.

- Databases of text and product data to replace reference manuals.

- An interface module that translates orders to the formats needed by the various local telephone company order systems.

The underlying premise for the SSNS is "needs-based selling," Gardner said. For example, the statement, "I'm a doctor working at home, and I have children," would trigger the SSNS to suggest telephone options appropriate for that profile.

## Thinking Machines, IBM pact foggy

BY MARYFRAN JOHNSON  
CIVILIAN

IBM placed a few bets on the massively parallel track last month when it announced a rather mysterious new alliance with Thinking Machines Corp. in Cambridge, Mass.

The mystery lies not so much in IBM's interest in the growth potential of this \$141 million niche market but in the paucity of detail about the alliance itself. Neither company is willing to discuss joint products, marketing plans or any specifics of the

agreement.

A few specifics are clear, however. Mutual need is one.

IBM wants its Enterprise Systems/390 mainframes to work in concert with Thinking Machines' systems, which only Digital Equipment Corp. and Sun Microsystems, Inc. computers can do now.

The deal also clears the way for IBM to sell more of its own disks and semiconductor chips to Thinking Machines.

"There's an old joke that a supercomputer is a system the disk drive manufacturers will give

away for free — if you buy enough disk to support it," said Christopher Willard, an analyst at San Jose, Calif.-based Dataquest, Inc.

### Need of green

Financial need is another compelling reason behind the alliance. "Compared to the size of Thinking Machines doesn't have enough money to do it all," Willard said. Development costs for a new generation of midsize supercomputers, for example, can run \$30 million to \$50 million.

While money may not prevent

a big hurdle for IBM, competition certainly threatens to throw up some future roadblocks.

DEC is allied with Maspar Computer Corp., and DEC salespeople are now selling Maspar's MP-1 massively parallel systems. Cray Research, Inc. is also busy developing its own massively parallel system.

"IBM is getting worried about missing out on the interest in massively parallel systems," said Omri Serfin, president of Inter International Co. in Los Altos, Calif. "They have nothing of their own to offer, although there are a number of research projects under way."

One of those projects is a

3-year-old venture with Steven Chen's Supercomputer Systems, Inc., which is developing a 64-processor highly parallel vector supercomputer. The Chen project is the largest venture for IBM, Serfin added, and is unlikely to interfere with any short-term benefits from the Thinking Machines alliance.

"This relationship between IBM and TMC will make people in business take the whole area of massively parallel computing more seriously," said professor Rocco Giles, a council member of the Center for Computational Science at Boston University, which installed a Connection Machine in 1988.

## Rational, Cadre unwrap object-oriented tools

BY JOHANNA AMBROSIO  
OF WASH.

Two vendors recently unveiled competing products to design object-oriented applications.

Rational Rose from Rational in Santa Clara, Calif., is meant for both analysis and design of object-oriented applications, while Teamwork/OOD from Cadre Technologies, Inc. in Providence, R.I., is intended for design only. Cadre sells a separate tool, Teamwork/OOA, for analysis.

Both products run on Unix machines and are installed at small numbers of user

sites that have been beta-testing the software. Teamwork/OOD is available now for Sun Microsystems, Inc. Sun 4 workstations for \$2,775 and is running at approximately 10 installations, including AT & T, the company said. Rational Rose is being beta-tested at one shop that Rational would not identify and will be generally available in February for \$3,995 on the IBM RISC System/6000 and Sun Sparcstations. Jon Williams, Rational's marketing manager, said that by year's end there will be approximately 100 installations.

Other platforms will follow those already announced, both companies said.

Terry Bennett, an analyst at Computer Intelligence/Infocon in Portland, Ore., said that to his knowledge the Teamwork/OOD product is "the first work-group tool for building object-oriented applications. It's an important step because the hang-up with object-oriented has been that it's not suitable for groups of people working on large software projects."

Paul Bloom, an analyst at Volpe, Weitz & Co. in San Francisco, said that both products will likely be received better in the technical software development market than in commercial information systems shops. "This is not an MIS type of product. It will be a long time before MIS

learns object-oriented anything," he said. Teamwork/OOD supports Project Technology, Inc.'s Recursive Design methodology and Oodle graphical notation, while Rational Rose supports the Booch method. Les Mammocchi, Cadre's chief technical officer, said that Teamwork can also be used with other methodologies and notation methods.

Rational has "closely coupled its notation and their tools, and we have not," Mammocchi said. "Is that good or bad? I don't know. It comes down to a matter of personal choice."

Another difference is that Teamwork/OOD automatically generates C++ code, while Rational Rose is language-independent. Users can choose from among any of the object-oriented languages to work with Rational Rose, including C++ and Smalltalk, but must compile the code in a separate step.

Williams said that his company's product is "a full-fledged object-oriented system, not a hybrid approach that has its roots in the structured world. Teamwork/OOD is a hybrid."

Mammocchi responded, "Our product reflects a real-world view about building real-world systems."

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Research Programmer  
University of Illinois

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Stimuel Young  
Programmer / Analyst  
Solovay Business Systems, Inc.

"It is a very well put together tutorial on how to construct a system using the IEF. It gives one the basics to start getting it done."  
E. E. Porecki  
Data Administrator  
City of San Antonio, San Antonio

"This was a good learning experience... well written... easy to follow. The tutorial gave me a taste of the different capabilities of the IEF and how they tie together to produce systems."  
Richard L. Brown  
Database Systems Analyst  
PARC Service

"I was very favorably impressed. The tutorial gave me the training I needed and the flexibility to use on weekends and after work."  
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**TEXAS  
INSTRUMENTS**

LOUISVILLE, Colo. — Storage Technology Corp. decided to reach out and touch Unix servers recently, adding its family of tape-cartridge drives to connect with them. Using the new drives, Unix servers can, for the first time, store data files on Storage Tek's 4400 Automated Library System.


Until now, the library system worked only with large-scale systems, including IBM-compatible mainframes, Unisys Corp. mainframes, Digital Equipment Corp. VAXs and Cray Research, Inc. machines.

The new Storage Tek 4780 tape-cartridge drives connect with the Unix machines through a small computer systems interface in the 4781 controller. Each cartridge holds 200M bytes — the same amount of uncompressed data stored on IBM 3480 tape cartridges. A minimum configuration subsystem of one 4781 controller and two 4780 tape transports is priced at \$96,000.

Storage Tek executives said the 4780 is only the first in a family of open systems peripherals it is developing in response to the growth of Unix systems. The drives are currently available for computers made by Sun Microsystems, Inc., Pyramid Technology Corp., Ncube Corp., Alliant Computer Systems Corp. and Scobee Computer, Inc.

Industry analysts said the drives are part of an overall Storage Tek strategy that views Unix machines as strategic IS platforms. "Unix servers are increasingly being used as central repositories for data," noted Bill Stone, director of end-user systems research at Technology Investment Strategies Corp. in Framingham, Mass. "These machines are often equivalent to midrange mainframes. The question for IS managers is this: How are they going to be backed up?"

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# New SAS gear handles larger records

Upgraded software handles 80% of production data for the company's service to seven states

BY SALLY CUSACK  
CHICAGO

CARY, N.C. — SAS Institute, Inc. recently released an enhanced version of its System 2000 data management software that supports larger records in databases. Currently running at 200 sites worldwide, System 2000 is a hierarchical package that runs under the IBM MVS and CMS operating environments. SAS acquired the product from Intel Corp. in 1985.

Highlights of Version 12 include extended file limits for database records and components, dynamic file allocation for MVS, complete CICS command-level support and full 31-bit addressing support.

Randy Horne, a systems programmer at the Tennessee Valley Authority (TVA), uses System 2000 software to store and manipulate 80% of the company's production data.

The TVA provides electric power to consumers in seven states and houses two

IBM 3090-class mainframes at the Chattanooga, Tenn.-based data center. Horne said he supports production in four multiuser regions.

This translates into approximately 10,000 terminals with access to System 2000 via Systems Network Architecture/VSAM connections.

Horne said the new release incorporates many requests from users, including additional user exits and database read-only capabilities.

"There are 30 to 40 different exit

points at the code level," Horne said. "You really don't run into too many vendors that offer that level of customization."

What Horne said he likes best about System 2000 is its support, stability and recovery capabilities — in that order. He also said he likes the software's ability to work with IBM's DB2 relational database product.

Admitting that DB2 is beginning to "edge into" his System 2000 domain, Horne said this really does not create any problems. The two programs work well together via SAS Access, a bridging program developed by SAS.

"Our applications here are extremely varied — flood controls, navigational, financials and inventories," Horne said. "We also have an enormous amount of SAS 6.0 out there."

The SAS System is the software vendor's flagship product. It is a statistical and applications development environment that can be used in both single and multiuser configurations on a variety of hardware platforms.

Via SAS Access, end users at the TVA can use System 2000 with SAS 6.0 in a point-and-click environment.

The TVA is currently running Release 11.6 of System 2000 and is moving to the newly announced Release 12 at the beginning of the year.

First-year license fees for Version 12 range from \$8,050 to \$35,000.

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## Prime

CONTINUED FROM PAGE 27

Sales of the 50 series machines are down 40% from last year.

"The erosion of the installed base has accelerated at an alarming rate," said Thomas Wilkott, vice president at Aberdeen Group, a Cambridge, Mass.-based research and consulting firm. "If they can't get their high-end CMOS machine out the door, they are in big trouble."

Ned McMillan, president of Prime's Computer Systems Business Unit, said in a recent interview that Prime will continue to provide a flow of modernized, CMOS-based 50 series products to the installed base, including a multiprocessor with board-swapping upgrade capabilities to a Unix environment.

The company will also be porting PI Plus, the Unix-based version of Prime's Pick-like database software, onto other vendor platforms as part of the dual-rail strategy.

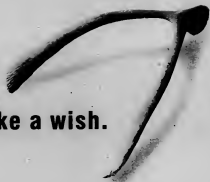
Referring to the layoffs, McMillan said, "I have just bet my job on my belief that the field is sized correctly for our level of business over the next three years."

McMillan said he will be announcing a comprehensive business strategy within the next 30 days, which will include actively soliciting new customers via the value-added reseller market. He said Prime will succeed based on its reputation for quality, service and support in the value-added reseller marketplace.

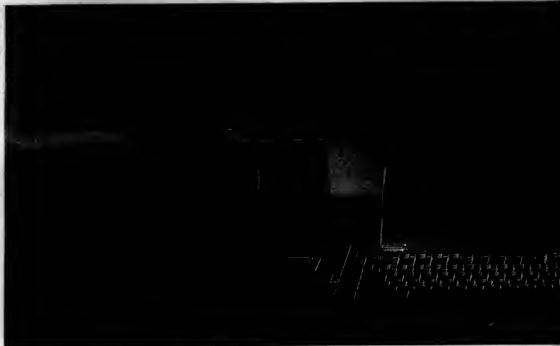
McMillan emphasized that "the focus of the business will be on the needs of the customer — if necessary, to the exclusion of everything else."

Matt Weber, technical board chairman for the National Prime Users Group (NPU), said concerned NPUG members will be meeting with Prime executives early this month to plan future strategies and relationships.

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## NEW PRODUCTS—HARDWARE

## Data storage

EMC Corp. has unveiled the Symmetrix series of Integrated Cached Disk Arrays (ICDA) for Unisys Corp. mainframes.

The Symmetrix ICDA architecture is based on redundant array of inexpensive disks technology. It uses 5¼-in. disk drives and employs mirroring as well as caching for enhanced performance. Up to 24G bytes of storage is provided.

Unisys 1100 and 2200 systems are supported. Prices range from \$150,000 to \$475,000.

EMC  
171 South St.  
Hopkinton, Mass. 01748  
(508) 435-1000

## I/O devices

MPI Technologies, Inc. has devised the Blue Kit, a connector allowing mainframe and midrange computer users to access Hewlett-Packard Co. Laserjet printers.

The Blue Kit provides coaxial and twin-axial connection and emulates IBM's Intelligent Printer Data Stream host-to-printer page description protocol.

The kit is priced at \$2,600.  
MPI Technologies  
Suite 301  
4952 Warner Ave.  
Burlington Beach, Calif. 92649  
(714) 840-8077



The Blue Kit from MPI Technologies allows access to HP Laserjet printers.

Concurrent Computer Corp. has announced the Intelligent Bus Interface Module (IBIM) I/O subsystem.

The IBIM, currently available for the company's real-time Unix computer series, is intended for use with high-speed data acquisition applications such as radar, sonar, wind tunnels and engine testing, according to the company. It includes an optional math coprocessor and provides a second separate 80M byte/sec. parallel port for connection with external devices.

Pricing ranges from \$3,400 to \$5,400.  
Concurrent Computer  
100 Apple St.  
Tinton Falls, N.J. 07724  
(908) 758-7000

## SOFTWARE

## Applications packages

The System and Computer Evaluation and Review Technique (SCERT) Version 3.0 is now available from Pinnacle Software Corp.

SCERT is a capacity planning software

product for MVS systems. The new release includes an interactive data entry and verification system, on-line Help, advanced graphics and an enhanced Performance Library. The price is \$49,500.

Pinnacle Software  
5185 MacArthur Blvd.  
Washington, D.C. 20016  
(202) 537-2700

IBS Corp. has announced an upgrade of Quick-Conference for XA and Enterprise Systems Architecture mainframe platform.

Quick-Conference performs conferencing, recording and auditing functions in training and monitoring users. Release

3.1 includes Script Relay and Message Broadcast features; a new Export/Import feature passes scripts to other CICS systems. The product costs between \$12,000 and \$20,000.

IBS  
12626 High Bluff Drive  
San Diego, Calif. 92130  
(619) 792-0273

## Unix software

Unix Systems Laboratories, Inc., a subsidiary of AT&T, has released C++ Standard Components Release 2.0.

The product is a source-code library of low-level C++ language routines that speed application development; the company said. It is available for Unix systems.

Pricing is set at \$1,500 for the initial processor license and \$1,000 for additional processors.

Unix Systems Laboratories  
190 River Road  
Summit, N.J. 07901  
(908) 532-5006

Visual Edge Software Ltd. has developed UIM/X 2.0, a graphical user interface (GUI) development tool for the Open Systems Foundation's Motif under Unix.

UIM/X 2.0 (\$5,000) provides a GUI Builder Engine and configurable editors, allowing users to customize their tool set.  
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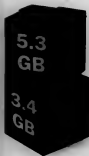
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# PCs & WORKSTATIONS

## COMMENTARY

Jesse Berst

### Big GUIs on campus



Welcome to my new twice-monthly column on the graphical user interface (GUI). In this first installment, I'll explain why GUIs such as Windows and Presentation Manager make IS professionals more important than ever before.

In the 1980s, it was fashionable to claim that IS departments had lost control of the desktop. Personal computing was the wave of the future, and IS management was irrelevant.

But the advent of GUI computing has brought new respect. "Two years ago we were lucky if 30% of all purchases followed our recommendations," admits Daniel Willis, a senior analyst at 3M Information Systems.

Today, Willis advocates Microsoft's Windows as a corporate standard, and he says, "more than 70% now follow our guidelines."

This renewed regard results from a new understanding of where GUI computing is taking us. Yes, the GUI brings individual productivity gains. But its biggest potential is as the integrating element for networked, companywide computing.

Whether you call it "enterprise computing" (a la IBM) or "information systems," the GUI is the

Continued on page 66

## Apple printers ease graphic integration

BY JAMES DALY  
CITICORP

SAN JOSE, Calif. — Pictures were worth a lot more than a thousand words at last week's Seybold Computer Publishing Conference & Exposition — the ability to understand the realm of information personal computers typically generate often depends on them.

While the proliferation of the PC has streamlined information gathering, the glut of data that PCs produce sometimes clogs, rather than clears, corporate information arteries. "We've shipped millions of PCs, and what we have now is more paper, more [electronic mail] and not enough time to sort through all the information," said Denise Schulz, director of image product marketing at Apple Computer, Inc. "The challenge is no

longer to create documents but get them noticed."

Apple tried to do its part toward making that wealth of information easier to digest when it introduced two laser printers, a scanner and a 21-in. color monitor.

The Laserwriter IIF and Laserwriter IIG will replace the Laserwriter NT and NTA printers. The new printers will employ two new Apple technologies that both smooth the jagged edges characteristic of laser-printed text and ease the incorporation of pictures in documents.

The Laserwriter IIG, which is roughly 20% faster than the Laserwriter IIF, is based on Motor-

ola, Inc.'s 25-MHz 68030 chip and offers 300 dpi resolution, 5M bytes of random-access memory and connection to Ethernet, Apple's LocalTalk and serial interfaces. It will retail for \$4,599.

The 20-MHz 68030-based Laserwriter IIF also offers 300 dpi resolution as well as 2M bytes of RAM and connection to LocalTalk and serial interfaces. It will retail for \$3,599. Both printers are expected to be widely available by Nov. 1.

Other products introduced at the four-day show included the following:

• Digital Equipment Corp. announced its Open Publishing Products suite, which will in-

clude a compound document editor and presentation graphics package designed to work with the Sun Microsystems, Inc. product line.

• Sony Corp. rolled out the Seps 1000, a digital studio camera. It costs less than \$50,000 and includes a digital processor, a 13-in. color monitor and image acquisition software for Adobe Systems, Inc. Photoshop.

• XLI Corp. in Woburn, Mass., unveiled the Laserpix 3.0 high-resolution graphics printer controller board. It will be available immediately for IBM Personal Computer and compatible computers using an Intel Corp. 80286 or higher chip and laser printers with available video port. The price will be \$1,495.

• Kyvision, Inc. announced the integration of Interleaf TPS software into its Authoring and Document Management System.

## Drawing tools come into focus for Windows

BY CAROL HILDEBRAND  
CITICORP

Software vendors sketched a clearer picture of the Windows drawing software market with a batch of announcements last week.

The market in the DOS and Apple Computer, Inc. Macintosh arena is saturated with such dominant players as Adobe Systems, Inc.'s Illustrator and Aldus

Corp.'s Freehand, but analysts said that the Windows drawing market is just now kicking in. The biggest package currently in play is Corel, Inc.'s Corel Draw.

Chief among the announcements was Software Publishing Corp.'s unveiling of Harvard Draw for Windows at the Seybold Computer Publishing Conference & Exposition on Wednesday.

Analysts said that Harvard

Draw, although an easy-to-use program packing a lot of power, is not in the same class as Corel Draw. According to Tim Bajarin at Creative Strategies Research International, Inc., "It's not as high end as Corel, but I think that SPC is positioning it as a more mainstream."

Harvard Draw allows what-you-see-is-what-you-get text entry, and users can work directly in Preview mode rather than working in outline and viewing changes in Preview. A font-styling tool lets users shape text in a curve, and the color palette basically lets a user mix his own colors. The package costs \$595.

Micrographix, Inc. pushed the

competition with a more stripped-down drawing package for only \$149. Windows Draw lacks such features as a wire frame working view and less error-prone, but the price is hard to beat, analysts said.

Aldus chimed in with a Windows version of its own, bringing its popular Freehand drawing and illustration package over to the hot new environment.

With the drawing software market currently at about \$100 million, analysts predicted the 15% segment held by Windows applications could balloon to a sizable chunk in Microsoft's environment as its way into heavy use.

OCTOBER 1991

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
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YOU CHOOSE  
WHAT  
THEY HAVE  
TO OFFER.**

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- Were they overwhelmed by the issues?

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\*Source: Computerworld article, February 1991



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# IDC WHITE PAPER

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INTEROPERABILITY:  
CORNERSTONE OF OPEN SYSTEMS

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## Interoperability: Cornerstone of Open Systems

### INTRODUCTION

*"Interoperability" and "open systems" are terms commonly and loosely used in conversations about computing. These terms slip smoothly off the tongues of both vendors and users alike. Vendors like to say their systems are interoperable, or better yet, open. Users say they want to be interoperable and open, but don't believe it will happen soon.*

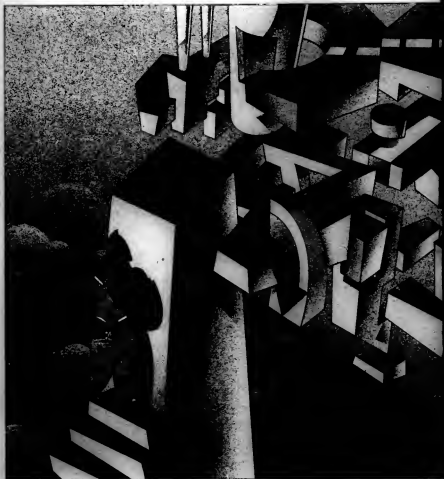
*When all the talking is done, however, the emergence of open systems is dependent on a new generation of sophisticated users seeking solutions to their application requirements. This new generation of users has wrested control of computing away from the vendors who controlled the industry during the 1960s and 1970s. And they intend to maintain it. The 3.5 billion users expected to be on-line worldwide by 2000 will have the power to build open systems that conform to their needs.*

*The new user predominance will be vastly diluted, however, if users fail to control the changes reshaping the IT industry. And in this endeavor, they must enlist the services of vendors, for there can be no effective control of growth without an innovative stream of new tools. It is also necessary to integrate these new tools into existing systems with minimal disruption.*

*Unix will play a prominent — but not paramount — role in the world of interoperability and open systems. Designed with microprocessor-based systems in mind, and familiar to a high percentage of students, it will continue to play its role as a locus of innovation.*

*Just how soon interoperability gives way to open systems remains to be seen. Given tools such as networks, computer-aided software engineering and systems management, that day is approaching more quickly than ever.*

IDC White Paper







AT THE SIMPLEST LEVEL, IT MEANS VASTLY IMPROVED RESOURCE SHARING. AT A GRANDER LEVEL, IT MEANS INVESTMENT PROTECTION. AT THE GRANDEST LEVEL, IT MEANS ENABLING NEW WORK STYLES. ■ "IT" COULD BE OPEN SYSTEMS. OPEN SYSTEMS MAKE CONCEPTUAL SENSE. BUT REALITY INTERVENES. OPEN SYSTEMS, LIKE THE

DREAMED-OF HIGH-SPEED TRAINS THAT LEVITATE ABOVE TRACKS BUILT WITH HIGH-TEMPERATURE SUPERCONDUCTORS, REMAIN ON THE PERIPHERY OF POSSIBILITY. ■ INSTEAD, "IT" IS INTEROPERABILITY. WHEREAS THE GRANDIOSITY OF OPEN SYSTEMS IS DAUNTING, THE PRACTICALITY OF INTEROPERABILITY INVITES ACTION. FASTER TRAINS

## INTEROPERABILITY: CORNERSTONE OF OPEN SYSTEMS

ARE EASIER TO COST-JUSTIFY, SIMPLER TO BUILD AND MORE CERTAIN TO BE INCORPORATED INTO SOCIETY IF THEY RUN ON EXISTING TRACKS. OTHERWISE, ENTIRE NEIGHBORHOODS MUST BE LEVELLED. ■ THE DIFFERENCES BETWEEN INTEROPERABILITY AND OPEN SYSTEMS ARE SUBTLE. THE TECHNOLOGY OF INTEROPERABLE SYSTEMS

*Interoper*

THE BIG PICTURE IN O



PEN SYSTEMS



## IDC White Paper

allows them to communicate across previously incompatible aggregations of hardware and software with a minimum of human intervention, usually in the form of specialized tools placed at network junctures. The value of open systems technology is found both in its availability and its diversity. Its availability allows it to interoperate across a wide spectrum of systems, while its diversity gives it unlimited ability to service new and innovative applications.

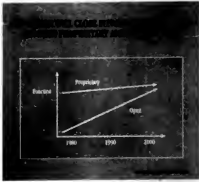
New technologies offer the potential to increase productivity. But existing technologies are essential to completing work that needs to be done now. "Out with the old and in with the new" might be a reasonable strategy in some cases, but not in the case of information systems. Needed at once are strategies that increase the utilization of existing resources and also facilitate the adoption of more productive technologies. Succinctly stated, the new must be made to interoperate with the old.

This does not mean that interoperability and open systems are incompatible goals. The pursuit of interoperability generally leads farther down the path toward open systems. And it is likely that, when open systems are finally realized, they will be built largely on a foundation of interoperability.

Interoperability requires planning, commitment, resources, and, like most changes, involves risks. But a reasonable interoperability strategy that does not engender huge disruptions can improve the productivity of existing information technology (IT) investments. It can also enable new application forms and ultimately pollinate mature or budding information systems with new technologies.

The computer industry is going through a painful but necessary transition. Four factors are driving this transition:

- an increasingly large number of users
- increased user sophistication
- new software standards that are creating the potential for an explosion in application innovation
- new modes of processing, character-



As users apply their ingenuity to their IT systems, the results will eventually spread across a wide range of user systems, making them truly open.

ized by their close integration with user firms, i.e. airlines reservation systems.

### THE CRUX OF OPEN SYSTEMS

What constitutes an "open system" is one of the most controversial topics in the computer industry. Yet upon close inspection, many opinions that on the surface seem so different have much in common.

Some claim that open systems are synonymous with Unix; that the presence of Unix is a necessary and sufficient condition of open systems. Thus, in their view, all Unix hardware, software, communications, applications, vendors, etc., are open. Anything not Unix is not open, and therefore, is bad. The implied message is, "Throw it all away and start from scratch."

Others believe that open-systems are a dream; that the open systems market will never be able to completely match the portfolio of tried-and-true technologies available from proprietary vendors. Specifically, they maintain that Unix is unable to supplant other entrenched operating systems such as MS-DOS and MVS. This view, however, is less a criticism of open systems and more a reflection of bias against Unix.

As is the case in almost all disagreements where passions play, both sides are somewhat correct. Certainly it is hard to imagine open systems without Unix. It is also hard to imagine open systems

built on Unix only. What seems most likely to happen is that users will find intelligent ways to employ non-Unix technologies in their installed systems.

One way to gauge the importance of Unix in today's computing world is by assessing its size in the overall IT market. IDC believes that the current asset value of all equipment, software and expertise in the U.S. alone is more than \$500 billion dollars. In this accounting, expertise is defined as staffing costs and dollars spent on third-party services. Just looking at the slice of the asset pie accounted for by operating systems, Unix constitutes only 10% of the \$193 billion

segment. This illustrates that open systems will embody more than just Unix. If they didn't, some \$180 billion worth of equipment could become obsolete.

In IDC's view, the crux of open systems is the newfound ability of users to choose the right technologies to solve their application requirements. Open systems are not about products being sold, or standards being published, or volumes being distributed. Open systems are about choice: customer choice. In IDC's opinion, open systems are things to be built — and customers are the builders.

Ten years ago, much of the industry's expertise was on the supply side in the hands of vendors. These vendors were able to regulate rates of innovation. In this regulated environment, product cycles were long and generally stable.

Back then, users were much less knowledgeable about computer technology and how it would be employed. As a result, they followed vendor delivery schedules. When their supplier said, "New stuff, much better; time to buy," customers did.

A lot of the mystery has been taken out of computers in the last 10 years as the possibility of open systems became more realistic. Not only have customers gotten smarter about technology, they have become far more knowledgeable than their suppliers about how technology is, and should be, harnessed in their company.

This has led to a situation where, for

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# Open systems.




## Everyone agrees they're

No one's debating whether open systems are a good idea, but you'll hear plenty of discussion about what open systems are.

Some insist, for example, that an open system is a UNIX<sup>®</sup> system. But to others it's whatever it takes to get their different operating systems, networking protocols and databases working as one, and the sooner the better.

That's why IBM views open systems so openly. To us, they begin less with particular technologies and more with the needs of your business.

The real goal is to liberate information that's trapped around your company, so more of your people can use it more easily, and to open commu-



## good, but not everyone agrees how to get there.

communications with customers and suppliers, who no doubt planned their systems without thinking about yours.

And of course, you need to accomplish all this without scrapping your existing multivendor investments.

So the paths to open systems will vary, but there's one thing that won't—consistent industry standards. IBM is fully committed to open systems, so we're equally fervent about standards.

We're active on over 1,200 standards initiatives. We're a sponsor of OSF<sup>®</sup>, a member of X/OPEN<sup>™</sup> and we support ISO<sup>®</sup>, ANSI<sup>®</sup> and IEEE<sup>™</sup> to name a few. And when a new standard

holds promise, we support its development.

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## IDC White Paper

the first time, users are the strongest force in the computer industry. Emboldened and enlightened, they are leveraging their power as they shop for technology. From this position of strength they are demanding three things:

- control over their information systems now and in the future
- facile technology transfer
- protection of existing information technology assets

IDC has developed the "Open Systems Cube" to depict the relationships among these goals.

On the Y-axis we place the degree of customer control. As customers gain control over their systems, they are in a better position to maintain system availability and lower their reliance on individual suppliers for new technologies. In this environment, portability and scalability are essential to increasing customer control.

On the X-axis we place facile technology transfer. The easier it is for the information system to adopt new technologies, the more open the information system.

On the Z-axis of the Open Systems Cube is the third — and too often discounted — aspect of open systems: the degree to which the system affects existing assets. Introducing new technologies into an existing system is made especially difficult if, in the process, large portions of old technologies must be replaced. The issue is not trading device for device, e.g., a color terminal for a black and white terminal, but replacing expensive support hardware and software, such as controllers, system software or entire CPUs. A system is more open if productivity enhancements are not solely limited to the introduction of new devices at the expense of old, but also derive from enhancements to existing equipment as well.

The three goals of open systems — control over information systems, facile technology transfer and the protection of current IT assets — are not necessarily mutually supportive. Serious tradeoffs are present. For instance, customer control implies stability in the system, whereas low-adoption

barriers imply flexibility and ease of change. Moreover, a customer's ability to make changes may be constrained by the existence of mature installed technologies. In the real world, customers are wedded to certain suppliers. Does that mean that users should throw up their hands and be dominated by the status quo? Of course not. What it means is users must pressure their installed vendors to deliver new, more productive tools.

There is another critical issue related to interoperability and open systems. With increasing frequency, users want to create larger, more complex information systems from smaller, easier to maintain, and in many cases already stable ones. This trend is an example of users turning to interoperability as a means of increasing complexity while maintaining control.

Interoperability is different from open systems in one critical way: it is within reach while open systems remains elusive. Like open systems, however, interoperability must, and does, address control over information systems, facile technology transfer and the protection of existing IT assets.

Interoperability increases customer control by increasing the pool of available technology options. It does not, however, require portability, scalability and other more restrictive measures. All that is necessary is that systems can be combined when, and as, needed.

Interoperability aids facile technology transfer and abets lower technology adoption barriers through its dependence on standards.

Interoperability helps users exploit their existing base of assets by being open to the development of new technologies that are compatible with installed systems. To this end, IBM is laboring to improve its S/370 support for a range of technologies from the mundane, like TCP/IP, to the marvelous, like Open Systems Interconnection.

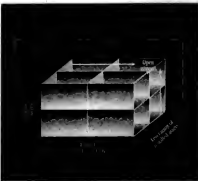
### COMPONENTS OF INTEROPERABILITY

Interoperable systems are composed of several contributing elements and characteristics. They include:

**Networks.** To interoperate, autonomous systems need some sort of network to pass messages, data and control. The network serves two purposes. First, it provides the means by which systems communicate and synchronize work. Second, it enforces security measures, ensuring that integrity problems in one system do not corrupt another. The more complex the interconnection, the more the network must facilitate communication. And, the more functional the network, the more interoperable its systems.

**Heterogeneous interconnection.** Interoperability usually implies the aggregation of IT resources from numerous suppliers into a single coherent system. Of course, this is not always the case; sometimes getting IT deliverables from an individual supplier to work together is often challenging by itself.

**Standards.** Heterogeneous interconnection and networking are easiest where standards are in place. And by standards IDC does not solely mean "things that are manufactured in volume" or "industry driven," but rather functional, stable, and well documented principles of operation. Given users' increased sophistication and the proliferation of standards, users now have the option of choosing the standards that will help them the most. Some of the most important standards are data languages



Customer control, ease of technology transfer and leveraging installed assets must all be highlighted in the open for open systems.



## Interoperability: Cornerstone of Open Systems

such as SQL and networking standards like OSI or OSF's DCE. Equally important are common user interfaces, especially graphical user interfaces, which make hardware components, program tools and overall systems look similar. These interfaces raise interoperability above the machine-to-machine level.

It is not important that all standards come from sources outside user organizations. Users both large and small are independently establishing interoperability standards to support their own processing needs. It may not be as inexpensive as adopting commercially available standards, but some situations require more specialized function, but no less stable definition. What is important is that standards, whether commercial or proprietary, evolve to support an information system's ongoing requirements.

**Flexibility.** Interoperable systems are not in constant contact with each other. Given the costs of network bandwidth, it is most desirable that they employ network resources only when necessary. The only time interoperating systems need to be synchronized is during transaction processing. The rest of the time they can be dedicated to other work.

**Control.** If there is one issue that cannot be stressed enough, it is the importance of control. Because of their dynamic nature, interoperable systems require special attention. Security must be enforced to maintain integrity not only of the combined entity, but of each autonomous system as well. Even more importantly, the personnel and procedures employed to control interoperable systems must be flexible enough to accommodate abnormal periods of interoperation.

**Management.** Interoperability is not a product, or an architecture. Like open systems, interoperability is what the customer makes it. As with open systems, a principal tenet of interoperability is choice—deciding which technologies to buy at which price, and from whom. But with greater choice comes greater responsibility.

IT suppliers today have only begun



Unix's relatively small place of the overall operating systems pie shows that it is not the ultimate key to open systems.

supplying highly-functional interoperability in their products. Few are selling anything like "shrink-wrapped" integration. If users want more than intermediate levels of interoperability, they either have to take control of customized integration themselves or be willing to pay someone to customize their systems. If they do it themselves, they must underwrite the risks. Many feel these risks are ultimately less costly than choosing a vendor solution.

Risk and uncertainty, however, have always been present in the IT industry. They have not, however, been unsurpassable barriers. As users overcome them, they become increasingly computer-literate and bolder in their exploration of application possibilities. This aggressive spirit has had a strong impact on the industry.

For example, the tremendous demand for Lotus 1-2-3 during the mid-1980's was instrumental in driving the market for DOS-based personal computers. Indeed, 1-2-3 became so widely installed that it was jokingly suggested that not only was it the number one spreadsheet package, but also the number one word processing package as well. Not satisfied to do only spreadsheets, curious and persistent users successfully transformed 1-2-3 into something it was not originally intended to be.

The case of 1-2-3 is illustrative of the

user-level innovation that is a major attribute of interoperability.

The challenge of providing users with the power to innovate and interoperate is substantial. Single-user stations defined by physical proximity are far simpler to conceptualize, build and manage than multi-user stations defined logically by the limits of networks. These single-user stations are also, however, far less powerful, which does not endear them to corporate computing environments.

Given the demands for more sophisticated capabilities, the goal is to provide users with access to complex tools, but make it easy for them to use those tools. This means IS departments must

provide user-friendly access to databases, networks and backbone applications.

Thus, interoperability implies a strengthening of partnerships between IS departments and end users, between vendors and customers, and between manufacturers and independent resellers.

The innovative environment engendered by interoperability feeds on itself at both the user and vendor levels. As users interoperate locally and globally, they increase their expertise by sharing their experiences. Vendors benefit by borrowing and trading technologies developed by their customers.

### THE ROLE OF UNIX

The operating system technology that has best exploited the phenomenal price/performance improvements in microprocessors while remaining inexpensive and easily accessible is, of course, Unix. Thus, as customers large and small have shopped for IT solutions with the best price/performance tools to support the building of relatively well understood and stable types of shared-resource work systems, they have turned to the potent combination of microprocessor-based systems and Unix.

The simplified and standard technology interfaces associated with Unix not only lower technology-transfer barriers, but also greatly improve partnering possibilities.





## Interoperability: Cornerstone of Open Systems

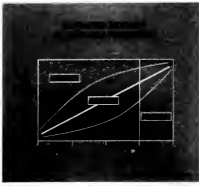
Unix technology developed by one source is easier to license or purchase because the cost of integrating the various technologies is lower. On the hardware side, this opens the door, for example, to deals between chip manufacturers and hardware vendors or disk drive and controller makers. Additionally, vendors in the Unix realm are developing more experience with these types of arrangements than most vendors focused on proprietary product sets. These companies will find it easier to develop and administer increasingly complex combinations of technology and marketing partnerships.

Perhaps no type of partnerships are more important in the computer industry than the partnerships forged between hardware vendors and independent software vendors (ISVs). Unix offers software vendors the opportunity to leverage development investments across numerous Unix environments because of lower technology-transfer costs. As a result, ISVs can afford to enter into more partnerships than they could in the proprietary world. Similarly, Unix systems vendors will find it easier to recruit ISVs because of the lower software-porting costs of Unix.

The final supply force driving Unix growth is the availability of relatively inexpensive, yet high-quality, Unix expertise. Because Unix is the language of learning in so many computer education programs, the best and most up-to-date computer industry labor pool contains many former Unix students. Unix minimizes the amount of proprietary technical training required to make these potential new employees productive, and, because of their relative youth, minimizes the salaries necessary for them.

On the demand side, the lower development costs incurred by Unix vendors are channeled to users in the form of lower prices. Although this sounds good, in the case of certain markets, it is important to note that these inexpensive but relatively young solutions may embody more risk than more stable, proprietary offerings.

Just as the benefits of lowered tech-



As the growth of hardware technologies such as desktop computers levels off, innovative software applications begin to proliferate.

nology-transfer barriers accrue to vendors in the Unix market, users also realize significant benefits from standardized Unix technologies. The costs of moving from one Unix vendor to another are significantly less than those incurred while moving among proprietary vendors.

This is especially important in a market characterized by an ever-expanding portfolio of application packages. Just as Unix makes it easier for ISVs to develop and market new applications, it also greatly simplifies user access to these new applications.

The lower technology-transfer barriers associated with Unix make it easier for users to adopt various related technologies. The expense and risk of integrating new Unix technologies into installed Unix systems is lower than that for most proprietary systems. And once Unix systems are installed and stable, they can be expanded with minimal disruption.

New classes of Unix-based solutions that offer expanded function at no more risk than proprietary systems are emerging. The frantic pace of innovation and the relative ease of transferring innovation among Unix platforms is rapidly closing the "function gap" between Unix solutions and all but the most fine-tuned proprietary solutions.

Even in the most monopolistic and proprietary environments, such as IBM's MVS/ESA, suppliers are laboring to incorporate Unix interoperability. In the past

few years, IBM has delivered support for Unix-oriented technologies such as TCP/IP, X-Windows and NFS within MVS.

Still, in many proprietary environments Unix interoperability remains expensive. Users who simultaneously want to experiment with interoperability while using stable, proven technologies to perform critical work should strongly consider turning to Unix. Because many interoperability tools such as TCP/IP and NFS are both inexpensive and highly functional on Unix platforms, they are a reasonably safe investment.

It should also be noted that users, like vendors, benefit from access to the pool of former students.

### THE FUTURE OF INTEROPERABILITY

Understanding the future of interoperability requires attention to two issues. The first is the rate of innovation in tools that support interoperability. The second is the way staff and expertise must be deployed in interoperable environments.

Not all the tools required for simple, heterogeneous and highly-functional interoperability are available today, let alone widely installed. Innovation must deliver new tools and enhance existing tools to keep from losing large segments of the installed base.

Three classes of tools are most important to the evolution of interoperability: networks, computer-aided software engineering (CASE) and systems management. The networking entity gaining most popularity in interoperability environments is the client/server model. The client/server model borrows heavily from widely installed software technologies such as transaction monitors and LAN operating systems. In the client/server environment, the rush is to integrate the best of these relatively stable technologies and generalize the result in the form of standards.

Widespread adoption of CASE technologies is required to facilitate the transfer of application technology and provide a credible foundation for interoperable applications. CASE enables the sharing,

## IDC White Paper

coordinating and documenting of application resources. With CASE, users and suppliers can at once increase program complexity, shorten development times and make vast strides in software quality.

The issue of software quality is especially important. As hardware platforms are connected into interoperable systems, shared software resources become critical to system availability.

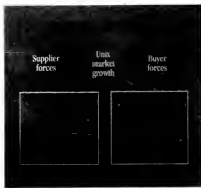
Greatly improved systems management programs will mask increased application complexity from users and place far better tools for controlling complex information systems into the hands of information systems management.

Enhanced networking, CASE and systems management are all required to lighten demands on personnel people can not be expected to keep up with highly dynamic interpenetrating information systems. For instance, it is impossible to imagine a management team keeping constant vigil over network changes that last milliseconds. Only computers can operate at such speeds, and only computers will be able to manage themselves.

The second issue relating to the future of interoperability is organizational management. Even though new systems management technologies will simplify the demands interoperability places on staff and support resources, the way staff and expertise generally are deployed must be adjusted.

Not surprisingly, the primary pressure points are the points of system interconnection. Consoles must be consolidated, data elements must be mapped to each other and application logic must be made consistent. These organizational issues affect much more than just the network management group. Operations, application development and storage management staffs will have to learn new tools and procedures. The good news,

Supplier forces  
Unit market growth  
Buyer forces



The convergence of supplier and buyer forces is driving Unit market growth.

however, is that all these new skills are transferable.

The rate of interoperability adoption will be greatly impacted by what IDC calls the network externalities of interoperable computing. Interoperability is a phenomenon that will feed on itself. The initial investment in interoperable infrastructures will be expensive. However, after these initial investments are made, the average costs of interoperable applications will drop precipitously. This is because users will be able to continually

leverage early software investments.

The economies of interoperability are thus similar to those of other network-oriented technologies such as telephony. The 400,000th subscriber to the telephone network may have to pay the same entry costs as the 400th subscriber, but he or she is able to call 399,999 other subscribers instead of only 399. It is this network externality that will be critical to the rate of growth in the interoperability market.

### CONCLUSION

In the computer industry, specialization and diversity are constrained by limits on the quality and costs of our tools, and our inability to use them to build coherent and consistently-behaving information systems.

There is no such thing as a computer technology that is appropriate for all problems. The complexity of the computer community requires specialization and diversity. Today, users can shop knowledgeably for the best alternatives. They are engaged in the innovation process that spawns new tools.

Strategies for ensuring that these tools interoperate with each other, and with those already in use, are required. New perspectives about procurement priorities, resource allocation and sources of value are also needed. In addition, new patterns of management must be developed and incorporated in future automated management tools.

Beware the comprehensive open systems plan. The open systems market is very immature and unproven. Someday open systems will become a pillar of the computer industry. Rather than wait passively for that day, it makes good sense to reach for interoperability.



As specialization progresses from IT to departments to users, less control curbs user freedom to innovate.

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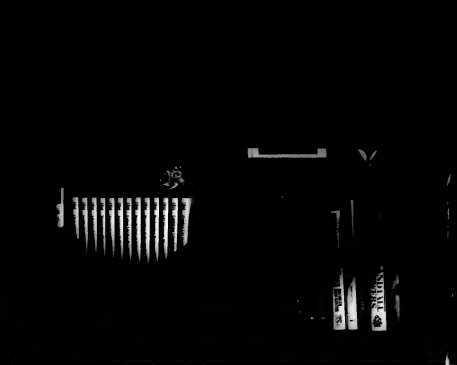
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## Security, controllability on PC Dynamics menu

BY CHRISTOPHER LINDQUIST  
OF STAFF

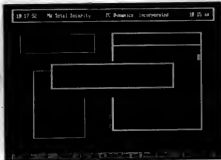
A consistent user interface, extensive security features and ease of use and maintenance are what PC Dynamics, Inc. claims to offer in its recently announced Menueworks Total Security, a DOS-based menuing system.

The package lets administrators control personal computer access by allowing them to do such things as design menus, assign passwords, set security levels for a variety of DOS functions, encrypt disks and log system use. Users can also be

came a beta-test user of Menueworks Total Security. "I'm really pleased with the product," he said.

Lloyd Chesney, chief information officer at the Palm Beach County Health Care District in Florida, has also been beta-testing Menueworks Total Security and said he has been very impressed with its solidity.

"I wanted to have a consistent user interface regardless of whatever interface they may be used to access the networks," Chesney said. He was also enthusiastic about the security features of the product. "I can lock



PC Dynamics' Menueworks gives administrators control by letting them build menus and assign passwords.

prevented from rebooting a machine, shelling to a DOS command line in applications, booting from a floppy and accessing restricted files. The product will identify more than 2,500 applications and install them into menu categories. It also includes rudimentary virus protection.

"It's about time somebody thought of security," said Mike Soto, data center manager at Credit Card Services Corp. in Springfield, Va. Soto had been looking for a security package for his networked workstations, which can contain confidential credit information, when he be-

came menu up to tight that no one can change anything."

When asked why he chose a menuing interface over one of the graphical user interfaces so prevalent, Chesney replied, "If you've ever worked with a lot of the graphical user interfaces, a user can tear up stuff that you've never even dreamed of — by accident."

Chesney added that he plans to set up several hundred users with Menueworks Total Security in the near future.

The suggested retail price is \$149.95. Site licenses are also available.

## GIS eases redistricting worry

Computing power helps Justice Department watch for discrimination

### ON SITE

BY GARY H. ANTHES  
OF STAFF

WASHINGTON, D.C. — For the first few years of every decade, the Civil Rights Division at the U.S. Department of Justice sees a huge spike in its work load as redistricting plans pour in from states claiming that population shifts revealed in the decennial census justify new voting districts.

Now, for the first time, the agency is tapping computer power to help it fulfill its legal mandate of ensuring that the proposed election districts are not drawn so as to disadvantage minority groups or to favor the majority.

Previously, Justice Department analysts would roll out carpet-size maps and overlay them with huge color-coded acetate sheets on which they would mark the proposed district boundaries. With handheld calculators, they tallied population figures by race from a thick printed report and posted the results onto the acetate sheets.

Then the real work began, trying to determine if districts contained equal populations to ensure equal representation in Congress and to see if boundaries were gerrymandered — drawn to favor or disadvantage local ethnic or racial constituencies.

"It was a very tedious, error-prone and laborious exercise that no one enjoyed," said Robert K. Bratt, executive director of the Civil Rights Division.

Now analysts sit at Sun Microsystems, Inc. workstations and use geographic information system (GIS) software from Environmental Systems Research Institute, Inc. to perform the same functions much faster and more accurately. The GIS package, called ArcInfo, allows users to draw district boundaries with a mouse onto color map images

on the screen. The system then computes and displays for any selected area population counts and percentages by race.

### Data gold mine

The GIS draws data from a 327-Gbyte database of census and geographic data stored in a Qstar Technologies, Inc. write-once read-many optical jukebox attached to the local-area network. Population data by race is available down to the street and block level for the entire U.S. The census data and the digitized maps are publicly available from the U.S. Bureau of the Census.

Using menus, analysts can select different levels, including counties, precincts and blocks. They evaluate the redistricting

plan as submitted, often comparing it with earlier district boundaries, then they move lines to test the effects of alternate schemes. Maps and statistical reports that reveal problems can be printed on demand and sent back to the jurisdiction submitting the plan for another try within 60 days.

Analysts and lawyers use the system as a tool to buttress their intuition, and areas with more than certain percentages of minority populations — highlighted by color — get special scrutiny. "If you see a line drawn right through the middle of a minority area that the vote is split, that might set off alarm bells," said Nancy Sweeney, contracting officer/technical representative for the system.

The system was set up by Syntex Management Systems in Lanham, Md., under a five-year, \$4.9 million contract. According to Bratt, analyses that used to take hours can now be done in minutes. The labor savings, he said, are estimated to produce a 171% return on the \$4.9 million investment over the five-year period.

Voting jurisdictions are increasingly using their own automated systems to support redistricting, using subsets of the Census Bureau's geographic and population data. Bratt said. That allows them to send in their plans on tapes or disks, bypassing the massive input of boundaries at the Justice Department.

But sometimes the plans — which Bratt said are occasionally submitted on "gas-station maps" — require careful scrutiny and some interpretation. One plan, from a Louisiana city, was submitted in the form of a map that looked as though it had previously served as a restaurant place mat, with advertisements for various local establishments printed around the edge. "Sometimes we have to go back to the jurisdiction for more information," Sweeney said.

### Remapping and recounting

Computers should make the arduous task of redistricting less cumbersome and more accurate.

U.S. Department of Justice Civil Rights Division combines

- 1,200 redistricting plans a year from 17 states, most filed as paper maps.
- 327G bytes of census and geographic data from the U.S. Bureau of the Census.

### Anal products as output

- Color maps displayed on screens or printed showing state redistricting plans overlaid with demographic data from the census.
- Reports analyzing the plan's impact on voting strength of minority groups.

### Input

- Geographic information system software for plan analysis and map production.
- 46 Sun Sparcstations and a Sun 4/470 file server on an Ethernet LAN running Sun's Network File System.
- 8 black-and-white printers, 4 color printers, and 2 electrostatic color plotters.
- A Qstar Technologies write-once, read-many optical jukebox.

CV Chart Joann Gonsky

## XDB: DB2 Development on your PC.

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## Keyfile unlocks potential of LAN-based imaging

BY ELLIS BOOKER  
CW STAFF

NASHUA, N.H. — Keyfile Corp., a start-up based here, last week introduced a low-priced image and text management system that heralds an emerging market of shrink-wrapped imag-

ing packages for local-area networks, according to observers.

"It's the first product with what I would call comprehensive desktop," said Peter Saneusano, president of Xionics, Inc., an Orange, Calif.-based maker of accelerator boards for personal computer imaging.

Up to now, document imaging has largely been a fixed application, deployed for specific tasks such as processing insurance claims forms.

But in reality, Saneusano said, the great opportunity for imaging is ad hoc work — those unstructured tasks of white-col-

lar professionals.

Keyfile's namesake software is built with this sort of worker in mind. For example, a user can scan an article from a trade journal, store a personal copy, send another version to a common mailbox on the LAN and fax copies to three other colleagues

on a distribution list — all without moving from the keyboard.

"There are several companies trying to deliver similar products... These guys are first," said Paul Zaganesi, a senior analyst at The Yankee Group in Boston.

"If you wanted to provide LAN-based faxing and add to that OCR services and then add to that a work flow, you're not talking about a whole lot of money," he said.

A major piece of the Keyfile software — the company's first since it formed in March 1989 — is its built-in work-flow tool. So-called work-flow systems manage the routing and distribution of images, text and graphics to users on the LAN.

Warren Zafra, assistant vice president at the chief technology office of Citibank and a beta-test user since June, praised the sys-

**I**T'S THE FIRST product with what I would call comprehensive desktop."

PETER SANEUSANO  
XIONICS

tem's graphical user interface in particular. "It's been designed with the user in mind," he said, adding that the program comes with a basic work-flow application built in that should be a boon for nontechnical users.

Zafra said he hopes to roll out a network of approximately 30 information systems users once a LAN for this purpose is in place.

The Keyfile Desktop features intelligent, object-oriented icons that can be configured by the user. The icons can execute a single command — such as sending an image file between two users or running a scanned document through optical character recognition (OCR) software — or initiate a sequence of actions.

Users "program" these sequences by dropping action icons into the desktop's Keyfile icon.

The package is also notable for its support of both Microsoft Corp.'s Windows 3.0 and IBM's OS/2.

On each desktop, users need Keyfile's \$995 Keyfile Desktop software, which requires at least an Intel Corp. 80286-class PC with a minimum of 4M bytes of random-access memory (8M to 8M bytes is recommended) running under Windows 3.0.

The Windows-based LAN server software (for work groups of up to eight users) costs \$1,955; the server software under IBM's OS/2 Extended Edition for larger LANs costs \$4,995 and requires the client workstations to be 80386-class or better PCs running OS/2 Version 1.2 or higher and Presentation Manager.



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# Charisma 2.1: Improved speed, ease of use

**Technology Analysis** — A roundup of expert opinions about new products. Summaries written by New Products Writer Derek Slater and Intern Lisa Davidson.

**M**icrografix, Inc.'s latest offering of Charisma, Version 2.1, includes Microsoft Corp. Windows 3.0 support and enhancements to an already rich selection of presentation capabilities. **Ease of use:** The Windows interface makes the commands more intuitive and combines with a significant speed improvement to make Charisma 2.1 easier to use than its predecessor.

**Charisma:** The program is weak in some aspects of text charting. For example, Charisma 2.1 lacks some organization-chart features, according to *InfoWorld*. Numeric charting, however, ranked among the best.

**Graphics:** Charisma 2.1 offers more than 2,500 pieces of clip art. Version 2.1 also includes an import option for Wordperfect Corp.'s Drawperfect WPG files.

**Tools:** Charisma 2.1 provides a wide array of drawing tools. Users can use rectangles, lines, rounded rectangles, freehand shapes, ellipses, curves or parabolas.

**Value:** At \$495, Charisma 2.1 provides a good selection of presentation capabilities and sound improvements in ease of use and speed.

## Micrografix's Charisma 2.1

Reviews	Ease of use	Charts	Graphics	Tools	Value	Overall
<i>PC Computing</i> 8/9/91	Intuitive menu structure	Turns out charts quickly	Generous supply of clip art	Many options	NC	Regret improvement in speed
<i>PC Week</i> 6/24/91	Good	Good flexibility	Extensive drawing tools	Provides template slides	NC	Flow program
<i>PC Magazine</i> 5/14/91	Alternative output difficult	Data handling accurate	Full-featured drawing tools	Editing is fairly easy	NC	Good choice for complex charts
<b>Users</b>						
W. Douglas Drumheller, Westinghouse Electric Corp.	L	■	■	■	■	Very efficient product
Terry McIntosh, Chevron Corp.	L	■	■	■	■	Width of charting tools
Alex Cowan, Large telecommunications company	L	■	■	■	■	Streamlined presentation
Sal Marchant, Comstar Peripherals	L	■	■	■	■	A little bit slow
<b>Analysts</b>						
Kath Thompson, Datacube Corp.	L	■	■	■	■	Continued improvement
Jerry Caron, Publisher Technical Reports	L	■	■	■	■	Tremendous graphics capabilities

Key: ■ Very good ■ Good ■ Fair ■ Poor Reviewers' evaluations are excerpts from articles. Refer to actual reviews for details. User and analyst ratings are based on independent survey. NC, No comment. \*PC Magazine reviewed Version 2.0.

## Vendor financial information

Micrografix reported first-quarter (ending in June 1991) net revenue of \$8.4 million, compared with \$8.7 million for the same period last year. Net income increased to \$680,000 from \$670,000. W. Christopher Morison at Alex. Brown & Sons rated the company's short-term performance as fair and its long-term stability as good.

## Micrografix responds

**Bill Cook, product marketing manager:** Charisma: Our clip art has organizational charts. It's easy to develop charts with the Charisma templates and text editors. We revised Version 2.1 in June and are looking at the next feature set. Graphics: We have a library of more than 2,500 clip art choices, extensive drawing tools and color palettes.

# Persuasion: Many features but lacks DDE

## Aldus' Persuasion 2.0 for Windows

Reviews	Ease of use	Charts	Graphics	Tools	Value	Overall
<i>InfoWorld</i> 8/13/91	Good	Excellent text charts	Very good	Very good	Very good	7.5*
<i>PC Week</i> 6/24/91	Regard menu arrangement	Good	Good variety of import/export	Versatile master-slave treatment	NC	Packed with features
<i>PC Magazine</i> 5/14/91	Complex	Standard business face	Powerful drawing tools	Fully integrated outline	NC	One of the most innovative
<i>PC Computing</i> 6/9/91	Global perspective; alignment control	No link to original worksheets	NC	Spectacular background washes	NC	Impressive achievement
<b>Users</b>						
Scott Baltes, RCA Design	L	■	■	■	■	Like the outline
Paul Goudon, Design Spectrum, Inc.	L	■	■	■	■	Most powerful
Linda Pritchard, Microsoft Office Communications	■	■	■	■	■	Extremely productive
<b>Analysts</b>						
Kath Thompson, Datacube Corp.	L	■	■	■	■	Product of choice
Rich Baltes, PC Letter	L	■	■	■	■	Hard to leave; great software

Key: ■ Very good ■ Good ■ Fair ■ Poor Reviewers' evaluations are excerpts from articles. Refer to actual reviews for details. User and analyst ratings are based on independent survey. NC, No comment. \*Updated ratings based on 1 to 10 scale.

## Vendor financial information

Aldus, based in Seattle, reported second-quarter 1991 revenue of \$44.3 million with profits of \$7.6 million. For the same quarter in 1990, revenue was \$33.3 million, and profits were \$5.8 million. David Bayer, an analyst at Montgomery Securities, rated Aldus' short-term financial performance as good and its long-term stability as very good.

## Aldus responds

**Mark Sherman, product marketing manager:** Charisma: DDE will definitely be addressed in a future version. Graphics: We do have object rotation but it is 90-degree increments. You'll only see one-degree increments later. Value: We're offering a \$99 limit-up from virtuality any PC presentation package through February.

**A**ldus Corp.'s Persuasion presentation graphics software for Microsoft Corp. Windows 3.0 is similar to its older sibling for the Apple Computer, Inc. Macintosh platform. **Ease of use:** Building a presentation in Persuasion starts with an outline rather than with individual slides. Reviewers said this method takes some getting accustomed to, but the outline is intuitively structured. **Charts:** Forms for bulleted text charts and organizational charts are included, along with many member chart forms. Individual chart elements can be edited. There are no built-in calculation tools, and, more significantly, Dynamic Data Exchange is not supported.

**Graphics:** Editable clip art and excellent color control are pluses for Persuasion. Files in a variety of formats can be imported. Support for object rotation and some advanced curve types are missing.

**Tools:** The slide sorter helps organize presentations. Strong screen show transition effects such as wipes and fades are also provided. However, the package lacks a script language for building interactive presentations.

**Value:** Persuasion carries the standard \$495 price tag and comes with Adobe Systems, Inc.'s AT&M bundled in. Reviewers agreed it has an excellent set of tools for building almost any type or style of presentation.

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*"This alliance should bring them into a market leadership position in the next 12 to 18 months. There's an unbelievable number of potential synergies between them, especially considering A&T's expertise in telecommunications."*

—Chris Christensen, The Data Group

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# Software smooths graphics compression

BY CHRISTOPHER LINDQUIST  
OF ENR

Transferring and storing image files can be a time-, money- and disk-consuming task.

One solution to the problem in image compression, and Iterated Systems, Inc. in Norcross, Ga., has developed a software product, the F.O.E.M. Fractal Format, that allows users to take images in a variety of formats and convert them into a highly compressed Fractal Image Format (FIF), which can result in shortened transmission times and reduced

storage requirements.

Compression is accomplished via a Fractal Transform Image Compression Board. Users can select any 8-bit grayscale or 24-bit color image in a supported format, such as Tag Image File Format or BMP bit maps, and convert it to the FIF with compression ratios that have been demonstrated at up to 2,456-to-1, according to the company.

Fractal Transform compression is a "lossy" technique, meaning the compressed image is not an exact duplicate of the original. Users can influence the quality of the FIF image by choosing the final

file size and level of compression to be used. Larger files and longer compression times result in more accurately reproduced images.

Another reported advantage of FIF is that it is "resolution independent." Because the original image is converted into a fractal formula, zoomed or shrunk images retain all the information of a full-size image.

The F.O.E.M. Fractal Format requires Microsoft Corp.'s Windows and has a list price of \$79. Fractal Transform Image Compression Boards cost \$1,995 to \$8,850, depending on configuration.

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### PC & WORKSTATION SHORTS

## NEC unveils Ultralite III

NEC Technologies, Inc. recently announced the Ultralite III, a 4.8-pound notebook computer based on a 20-MHz Intel Corp. 80386SX chip. The box has 2MB bytes of random-access memory (expandable to 10M bytes), a 60M-byte hard drive and an external numeric keypad. Microsoft Corp.'s Windows 3.0 is bundled with the box, which is expected to ship this week and carries a \$3,699 price tag. NEC also announced a \$999 Docking Station, which weighs less than 10 pounds and has room for an external floppy.

IBM's Cadam unit has released Version 3.0 of both IBM's CAD and CAD/Plus. IBM claims the desktop-oriented computer-aided design (CAD) packages offer a 300% increase in display performance for complex tasks such as associative dimensioning. Both packages are available now. CAD costs \$1,595; CAD/Plus is priced at \$2,295. A raster processing option, which both packages support, will ship in November and cost \$2,000.

Autodesk, Inc., a San Rafael, Calif.-based software vendor and leader in the CAD software market, announced recently that it had sold more than 1 million software packages. Included in the figure were 500,000 copies of AutoCAD, 300,000 copies of Generic CAD and 200,000 copies of AutoSketch. The company was founded in 1982 with \$50,000 in capital and is now valued at some \$1.3 billion.

Liast Software Corp. in Framingham, Mass., has announced the release of LPI-C++, a 32-bit compiler for use in multiprocessor Unix environments. The compiler will initially be available for Intel 80386- and 1486-based systems running Unix System V Release 3, but it is expected to be released for Scalable Processor Architecture systems running Sun Microsystems, Inc.'s SunOS and 80386 and 1486 systems running Unix System V Release 4. The compiler is available for \$1,295 per single user license. However, Liast has a special introductory price of \$695 per copy until Jan. 31, 1992.

Fera, Inc., a San Jose, Calif.-based maker of portable computers, recently announced its third notebook, the NIK-3665/25. The notebook is based on Advanced Micro Devices, Inc.'s 35-MHz AM386SX power management chip. Fera will sell the box with 4MB bytes of RAM and a 60M-byte hard drive for \$3,495. It weighs six pounds, claims a 5-hour battery life and has a 10-in. IBM Video Graphics Array-compatible screen.



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*"No other 'traditional' vendor has yet announced an intention, much less demonstrated the capability, of doing anything close to NCR's System 3000 family."*

—George Lindemann, Gartner Group May 28, 1994

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suggest. For example, parallel processing is ideal for relational database access, where System 3600 offers as much as a 1000% speed advantage over serial architectures.

## World-Class Database Engines.

Effective enterprise systems must be able to handle databases containing hundreds of gigabytes of information. Current mainframes can typically only manage 50-100 gigabytes. The System 3600 can handle databases up to 300 GB now, and for larger ones in the near future.



System 3000 database servers are also fault-resilient, offering 99.99% or greater availability. Combining high reliability with NCR hot-pluggable disk array technology makes System 3000 servers true world-class engines for mission-critical applications.

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## NEW PRODUCTS

## Software applications packages

Power Up Software Corp. has created Express Publisher for Windows, a \$249.95 desktop publishing software package for Microsoft Corp.'s Windows 3.0 environment.

Express Publisher provides templates for easy document creation, the firm said. Editable graphical page previews called Thumbnail Previews are included, as are object-rotation features and oversize document output.

The company has also announced Textappal, a Windows-based type-styl-

ing package that offers drawing tools and graphics-import capabilities. Textappal includes Adobe Systems, Inc.'s Adobe Type Manager and costs \$129.95.

**Power Up Software**  
2929 Campus Drive  
San Mateo, Calif. 94403  
(415) 345-5900

Visible Systems Corp. has built code-generation ability into its Visible Analyst Workbench computer-aided software engineering tool.

The tool now automatically produces C language and Cobol code from its repository, depending on application design specifications. The product can also gen-

erate SQL queries.

Pricing for the Visible Analyst Workbench starts at \$3,995.

**Visible Systems**  
950 Winter St.  
Waltham, Mass. 02154  
(617) 890-2273

Media Cybernetics, Inc. has upgraded Halo/Px, its gray-scale image-editing software package for DOS.

Version 1.2 offers keyboard shortcuts, increased file format support and better memory handling and performance, the company reported. Halo/Px includes posterization, inversion, cut-and-paste tools and airbrushing techniques.

The package costs \$299. Upgrades cost \$99.

**Media Cybernetics**  
8484 Georgia Ave.  
Silver Spring, Md. 20910  
(301) 495-3305

Media Vision, Inc. has announced the Multimedia Upgrade Kit for converting personal computers into multimedia PCs.

The kit includes Microsoft Corp.'s Windows 3.0 environment with Multimedia Extensions 1.0, an on-line user manual, and proprietary mixer software and audio tracks. The kit is implemented on compact disc/read-only memory.

The cost is \$999.

**Media Vision**  
47221 Fremont Blvd.  
Fremont, Calif. 94538  
(510) 770-8500

Logitech, Inc. has announced Version 1.2 of its Catchword optical character recognition software package for personal computers.

Version 1.2 offers increased accuracy and performance. It is available as a standalone package for \$249 or bundled with the firm's Scanman Model 32 gray-scale scanner and Graytouch image-editing software for \$359.

**Logitech**  
6505 Kaiser Drive  
Fremont, Calif. 94555  
(415) 795-8500

Structural Research and Analysis Corp. has enhanced Cosmos/M, a finite analysis tool in the firm's computer-aided software engineering line.

Cosmos/M Version 1.65 is an integrated set of modules for performing mechanical, structural, thermal and other optimization analyses. It adds modules for analysis of structural fatigue, crash dynamics and piping networks.

The Cosmos/M software runs on personal computers and a variety of workstations. Pricing for the basic system is \$4,800 on PCs and \$6,400 on workstations.

**Structural Research and Analysis**  
Suite 200  
1661 Lincoln Blvd.  
Santa Monica, Calif. 90404  
(213) 452-2158

Quicksoft has announced PC-Write Standard Level 2.0 for the personal computer.

The word processor adds mouse support, a thesaurus, automatic regeneration and import/export file formats.

The product costs \$129.  
**Quicksoft**  
210 First Ave. N. #224  
Seattle, Wash. 98109  
(206) 282-0452

## Database management systems

Pro-Drelbase, a nonprogrammable relational database management system, has been announced by Accelerated Software.

Pro-Drelbase is compatible with Ashton-Tate Corp.'s dBase file format. It allows users to design database systems without programming, the company said. It features query-by-example and mailmerge functions.

The product costs \$250.  
**Accelerated Software**  
180910 118th  
Edmonton, Alberta T5X 4X3  
(403) 456-9163

More products on page 74

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technology designed to integrate new and existing applications from many vendors, by providing a smooth exchange of data between the applications and by giving them a common look and feel.

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In COOPERATION's object-oriented human interface, icons are used to execute a series of tasks. For example, you simply select an icon of a report and the system will access databases throughout your enterprise, assemble the necessary information, and run the application you need to prepare the finished report.

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## Systems

An add-in card allowing personal computer users to run Sun Microsystems, Inc. Sparcstation applications has been created by Open Systems, Inc.

The Open Sparcard Kit provides all required hardware, software and cabling. It includes 6M bytes of dynamic random-access

memory and a version of Sun's SunOS 4.1.1 operating system. It also provides on-board Ethernet and DOS interface software.

Pricing is \$4,495 for a diskless configuration. A 213M-byte hard disk costs \$1,135.

**Open Systems**  
329 North Bernardo  
Mountain View, Calif.  
94043  
(415) 960-4040

Unisys Corp. has released new personal computers in its PW2 Advantage Series.

The PW2 series includes a 20-MHz Intel Corp. 80386SX-based system and 25-MHz and 33-MHz 80386 systems. The computers include integrated Super Video Graphics Array adapters.

Pricing starts at \$2,395 for the base configuration of the

80386SX system.

**Unisys**  
P.O. Box 500  
Blue Bell, Pa. 19424  
(215) 966-4011

## Peripherals

Logitech, Inc. has announced Fotoman, a portable digital camera that downloads photographs onto personal computers.

Fotoman (\$799) works with the company's Fototouch image-editing software for Microsoft Corp.'s Windows 3.0. It can store up to 32 images.

**Logitech**  
6505 Kaiser Drive  
Fremont, Calif. 94535  
(415) 795-8500

Micro Express has introduced three Video Graphics Array (VGA) adapters.

The 15-bit Hi-Color VGA Card (\$220) offers 32,768 colors at 1024- by 768-pixel resolution. The Extended VGA Card (\$170) offers 256 colors at 1024- by 768-pixel resolution. A 72Hz version of the Extended VGA Card (also \$170) is offered as well.

**Micro Express**  
1801 Carnegie Ave.  
Santa Ana, Calif. 92705  
(714) 852-1400

## Macintosh products

Facit, Inc. has announced the P5160 laser printer for Apple Computer, Inc. AppleLink networks.

The P5160 is a 16 page/min. printer available with 17 or 35 Adobe Systems, Inc. Postscript fonts. It includes 2.5M bytes of memory, expandable to 4.5M bytes.

Pricing starts at \$4,495.  
**Facit**  
University Center  
400 Commercial St.  
Manchester, N.H. 03108  
(603) 647-2700

## PC system software

Quantum Software Systems Ltd. has released QNX 4.0, said to be the first available real-time microkernel operating system.

QNX 4.0 is Posix-compliant and runs on any personal computer. It costs \$795 for single node. Additional nodes on a network cost \$695.

**Quantum Software Systems**  
175 Terrence Matthews  
Crescent  
Kanata, Ontario K2M 1W8  
(613) 591-0931

## Development tools

Silicon Valley Software has introduced the SVS C3 Code Construction Series, an applications development tool kit for DOS-based personal computers.

The product offers compilers for Fortran-77, ANSI C language and Pascal as well as a virtual memory extender and a debugger.

The Fortran version costs \$395; C language and Pascal versions are priced at \$325.  
**Silicon Valley Software**  
Suite 100  
1710 South Amphlett Blvd.  
San Mateo, Calif. 94402  
(415) 572-8800



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ONE offers the first set of enterprise-wide networking products based on OSI. To give you transparent, enterprise-wide access across multiple networks, machines, and software. And ONE makes full use of the end-to-end scalability of the NCR System 3000 to bring new levels of power to your organization.

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## Enterprise Management For Your Enterprise Network.

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offers standard network management for today. And the ability to accommodate the anticipated standards of the future.

StarSENTRY lets you consolidate network management at a single platform located anywhere in the network. It gives you the tools to manage systems from multiple vendors. And the power to manage the large global networks of the future.



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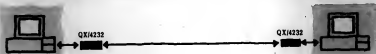


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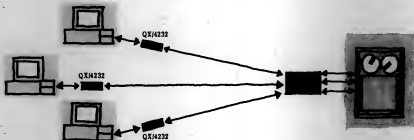
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# NETWORKING

## NETWORK SHORTS NT to show portables

Northern Telecom, Inc. will reportedly demonstrate its first wireless business communications system at the Telecom '91 show in Geneva this month. The system is said to enable office workers to carry their telephone handsets with them around their offices.

In the wake of the recent telephone outage in New York that grounded hundreds of flights, the Federal Aviation Administration (FAA) has been given permission to establish its own nationwide telephone system for air-traffic control. Last spring, the FAA was ordered by the U.S. General Services Administration to put its plan to develop an ultra-reliable system on hold and to use the standard, governmentwide Federal Telecommunications System-2000 network.

Personal computer local-area network support is a new service from TRW Customer Service Division that offers network planners, managers and users a round-the-clock source for troubleshooting hardware and software. It is offered nationwide via a toll-free number.

## Travelers' IS staff stays home

Insurer uses in-house 'know-how' to produce client/server installations

ON SITE

BY SALLY CURACK  
ON SITE

HARTFORD, Conn. — While client/server enthusiasts are waiting anxiously for sophisticated performance and availability management tools to come to market, a leading financial services firm has rolled up its sleeves and built the necessary tools in-house.

Using only internal resources, The Travelers Corp. has produced capacity planning methods and comprehensive remote diagnostic software for client/server installations nationwide.



Delvecchio sees different flavors of client/server

There is no typical client/server setup at The Travelers. Mike Delvecchio, technical di-

rector at the company, points to several different flavors of the technology both in development and out in the field.

He defines client/server as any two processes that rely on each other synergistically to produce work.

This can include personal computer to host, host to host or any other two machines operating together.

For example, there are applications that query knowledge-based engines for decision support and Esri-based applications that integrate information from IMS/CICS systems on a single screen for claims management.

When the company began for-

mulating a client/server strategy two years ago, it discovered that support structures were nonexistent.

The Travelers had been running in a Systems Network Architecture (SNA) environment with IBM 3090-class mainframes at the data centers. Now, it is migrating to a flat local-area network environment with Net-bis connectivity.

This will be the norm at most large installations, the result being LAN connectivity from every workstation to every other workstation, eventually replacing SNA connectivity and SNA protocols with LAN protocols.

Company research also revealed the need for effective capacity planning methods in the client/server world. To meet that need, The Travelers has built a series of benchmarks to gauge throughput capacity.

Continued on page 82

## Competition, ratings clouding router market

BY JOANNE M. WEXLER  
ON SITE

The router market is awash with vendors scrambling to one-up each other on price/performance, the number of protocols routed, techniques for routing them and wide-area interface support.

The month preceding this week's Interop '91 show in San Jose, Calif., has seen market leaders and niche players alike arming themselves with high- and low-end products in hopes of

grabbing a piece of the generous router market share still unaccounted for. The avalanche of announcements is leaving product differentiation a blur in the minds of many.

"The differences between products are becoming less and less obvious," said Todd Dugan, director of data communications research and consulting at The Yankee Group, a Boston-based consultancy. "The vendors now seem to be on a horsepower kick," jostling throughput as their strength, he added.

A recent example is Proteon, Inc.'s upgrade of its bridge/routers to address both IBM and Digital Equipment Corp. networking environments. Proteon's gear will now bridge local-area network traffic between Ethernets and 100M bit/sec Fiber Distributed Data Interface (FDDI) LANs while simultaneously source-routing IBM Systems Network Architecture terminal and LAN traffic.

The vendor has touted throughput of 25,000 packets per second for under \$20,000 on its reduced instruction set computing architecture. Dugan, however, noted that users "shouldn't pay too much attention to performance claims" because router throughput will differ depending on which protocol

is being benchmarked at any given time.

In addition, said Frank Dunsbeck, president of Communications Network Architects, Inc., a consultancy in Washington, D.C., "Performance ratings are only made at fixed packet sizes. A user's packet sizes may be entirely different."

The Proteon announcement follows a recent move by major router player Cisco Systems, Inc. to connect T3 ports over a high-speed serial interface amidst the LAN-WAN inter-networking hoopla. Prior to that, router heavyweight Wellfleet Communications, Inc. announced a whole new router architecture with a 1G bit/sec backbone supporting multiple

Continued on page 83

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It's a simple idea. That's why it's so compelling. People already rely on reports for information, and MIS has already put time and effort into developing reports that make sense. Monarch simply brings these reports alive. Not just plain-vanilla columnar reports, but also complex reports with multiple sort-levels.

More than one thousand companies already depend on Monarch to satisfy PC users who need mainframe data. At Southwestern Bell, Monarch moves data from mainframe reports into Lotus spreadsheets. "Monarch was worth every penny," says Steven Wilcox at Bell. Compared to the custom COBOL programming it replaced, Monarch delivers data faster, easier and at lower cost.

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# U.S. looks for new weather data sources

BY J. A. SANGE  
OF STAFF

The nation's only weather satellite is running out of fuel.

With the death of that satellite, the U.S. will face the near certainty in a little over a year that there will be no prediction data flowing to meteorologists, pilots, navigators and others. The crisis has led the National Weather Service to experiment with data alternatives to the satellite to piece together a contingency plan.

The dying satellite, GOES-7, for Geostationary Operations Environmental Satellite, sends photographic images and data about temperature and water vapor that meteorologists use to create their forecasts. It hovers 23,000 miles above the U.S.

## 'No ideal alternative'

"Loss of the satellite means that the imagery you now see on TV won't be there, and there is no ideal alternative," said Michael Steinberg, vice president of Accu-Weather, Inc., a State College, Pa.-based commercial weather-image distributor.

Although it was not noticeable on the evening news, the weather service's computer use of its data and image distribution channels — dedicated phone lines — for 48 hours to send out data gathered from a European weather satellite, military satellites and some National Oceanic and Atmospheric Administration (NOAA) research

satellites.

About 30 weather stations from Anchorage, Alaska, to Wallapa Station, Va., are evaluating the piece-together images and other data from the weather service's satellite program in Silver Spring, Md.

When users dial into the service, they need to know whether the nation needs to rent time on European or Asian weather satellites until a new GOES can be put in orbit. More such experiments are planned to help the service put together an interim system.

Using other nations' satellites would cost nearly \$200 million because new ground stations would have to be built to receive the data, according to Gary Hufford, regional chief scientist at the weather service in Anchorage. He said the cost of the GOES was \$60 million.

Next August, when the 5-year-old GOES-7 runs out of the fuel to keep it positioned correctly, it will become unreliable. Soon after, it will become completely unusable, according to Hufford. A backup satellite was lost in the Challenger shuttle disaster in 1986. Another satellite was supposed to go up late this year, but Hufford said it may never be launched because of mechanical problems.

Last month's experiment was the first national test to see what will happen when GOES-7 is gone. In the test, called NO-GOES, the weather service took one of its redundant data lines, which distributes GOES-collected information, and dedicated it to data gathered from other

sources "to evaluate other sources for meteorological utility," according to Andrew Noel, meteorologist with the weather service's satellite program in Silver Spring, Md.

When users dial into the ser-

vice, they need to know whether the nation needs to rent time on European or Asian weather satellites until a new GOES can be put in orbit. More such experiments are planned to help the service put together an interim system.

Using other nations' satellites would cost nearly \$200 million because new ground stations would have to be built to receive the data, according to Gary Hufford, regional chief scientist at the weather service in Anchorage. He said the cost of the GOES was \$60 million.

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Weather information generated from data gathered by a polar orbiting satellite is made into maps by an HP workstation.

vice's computer and select the type or types of data desired, it comes back to the user in raw format. On the experimental image, users were very different from what meteorologists are accustomed to. "The difference in looking at a snapshot from a satellite that's 23,000 miles up is one of a complete view of the states vs. a partial one," Hufford said. Meteorologists have to extrapolate the data differently to make sense of it, he said, and the

Clark, deputy division chief for the weather service's Satellite Service Division in Camp Spring, Md. Those users can download several types of data, from temperatures to humidity to crude cloud-pattern photographs. Commercial outfits, such as Accu-Weather, use computer technology to glamourize those images and get the moving cloud pictures seen on TV news.

The nation's most sophisticated weather technology was

not included in the experiment because the weather service's distribution system can only make information available in analog transmissions, Clark said. The system was developed in the 1960s, and the recording devices use an analog signal only.

That sophisticated technology was recently installed by the weather service in Anchorage, using Hewlett-Packard Co.'s HP 9000 Model 720 reduced instruction set computing workstations to take image and temperature information off of a polar-orbiting NOAA research satellite and crunch it into sophisticated computer images.

**Manipulating images**  
Unlike the data and images fed from the service's headquarters, Anchorage can manipulate images to find specific patterns without having to enhance the images first, said Accu-Weather does with mainframes for weather service data in the lower 48 states.

The weather service itself is still crunching data from GOES-7 on a Digital General Corp. Eclipse minicomputer installed in 1978.

A special card to convert Anchorage's digital images — which appear on a color monitor as moving patterns that can be customized. That is, to point out particular features — was damaged in transit and could not be rebuilt in time for Anchorage to send its weather information out in the NOGOS test, according to Hufford. That information covers the U.S. as far south as Southern California and as far east as Colorado.

## Products focus on increased need for mainframes to work as LAN servers

BY ELIZABETH HORWITZ  
OF STAFF

BROOMFIELD, Colo. — McData Corp. has upgraded its 6100 line of communications controllers to provide many of the same capabilities as an IBM 3172 model, plus added value. The vendor has also announced that its Linkmaster 5300 channel extender now supports the High-Speed Serial Interface (HSSI).

McData's Linkmaster 6100 Network Gateway-Server addresses a user need — "people trying to get their mainframes to function more effectively as LAN server platforms," said Rick Villars, director of networking architectures at International Data Corp.

This market is growing rapidly as companies move more aggressively into competing, Villars said. For this reason, IBM — or at least some

of its divisions — welcomes system compatibles such as McData's even though they take some of IBM's communications controller revenue, Villars added.

The gateway emulates a 3172 in that it can interconnect devices on an Ethernet local-area network to an IBM mainframe, either via direct channel connection or via remote VTAM-based link, the vendor said. Also like the 3172, it can act as a remote gateway between two host channels.

The new product also shares the 3172's two-way communications with IBM's Netview, enabling users to use the host-based management system to manage all of their Systems Network Architecture (SNA) equipment, including McData's.

In addition, the 6100 gateway is said to act as a translator between devices using Open Systems Interconnect (OSI), Digital Equipment Corp.'s Local Area

Transport (LAT) and Transmission Control Protocol/Internet Protocol, so that they look to an IBM host such as 3270 terminals, according to McData group product manager Brian Witt.

In contrast, the 3172 passes such protocols unchanged to the host, requiring the mainframe to do its own translation, using such cumbersome equipment as IBM's OSI Communications Subsystem, Witt said.

The translation capability is turning out to be extremely useful for the Air Force's Headquarters System Replacement Program, according to Michael Parsons, a Grumman Corp. network engineer assigned to the project.

"Unlike the 3172, the 6100 can be configured as a server so that it can change a Telnet device, such as an IBM VT100 or 220, into a 3270 device." The fact that McData's product can be managed by Netview is also a

key feature, Parsons said.

The server is also said to provide the translation that allows non-SNA devices, such as Telnet or LAT controllers, to communicate with multiple mainframes over a Token Ring LAN. And it can be managed by the Simple Network Management Protocol as well as by Netview, McData said.

**B**ECAUSE OF RAPID market growth, IBM is welcoming system compatibles from other vendors even though they take some of IBM's communications controller revenue.

The Linkmaster 6100 Network Gateway-Server is scheduled to ship in the fourth quarter. Prices range from \$12,360 for a base gateway to \$39,500 for a remote channel-to-channel configuration with full networking capabilities.

The 6100 server does not

have the 3172's ability to attach to IBM's Enterprise System Connection or Fiber Distributed Data Interconnect networks, McData said. However, the product is scheduled to get an Exact connection by the first quarter of next year.

McData also announced the Linkmaster 5300 HSSI System.

Originally developed by Caco Systems, Inc. on its way to becoming an industry standard, HSSI lets interconnectivity devices dynamically share bandwidth within a 45M bit/sec. T3 link, Witt said.

This would enable a company to daisy chain T3 bandwidth among bridges, routers, channel extenders and other

high-speed devices on an open-ended basis instead of having to allocate T1 or T3 links to each device, he added. In addition, a channel extender such as McData's can divide a single T3 link among, for example, an IBM tape drive that sends 12M bit/sec., and an IBM cartridge tape drive that sends 20M bit/sec., Witt said.



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## International audio standard could boost videoconferencing

BY JOANNE M. WEXLER  
CW STAFF

Shaded travel budgets, the National ISDN-1 initiative, falling prices and equipment enhancements are contributing to videoconferencing's metamorphosis from a gee-whiz, boardroom technology to a common communications vehicle.

However, users noted that still lacking is an audio compression standard to make various vendors' equipment interoperable and to allow customers to "take advantage of price and feature competitiveness," said Greg Chartrand, communications manager at the Superconducting Super Collider Laboratory in Dallas.

There is a near-complete international standard — dubbed "Fa4" — for compressing video, which most vendors support in its latest form. However, "Fa4 is still missing voice compression and assumes full noncompressed digital audio. This means audio consumes a full 64K bit/sec. channel," Chartrand explained. "Modifications would compress audio

down to 16K bit/sec., allotting more bandwidth to video."

The laboratory uses Videotelecom, Inc. equipment to conduct interactive conferences with high-energy physics experts in Japan and Italy over Integrated Services Digital Network (ISDN) service. Domestically, the laboratory sends its video over dedicated T1 lines because of sparse ISDN service availability in this country.

This situation is slated to shift in mid-

1992, when National ISDN-1 — an initiative announced in February for standard ISDN interface implementations across telephone company switches and customer premises equipment — results in broader ISDN offerings. Chartrand said he expects to move all his video traffic onto ISDN.

The top three video vendors now all combine Basic Rate Interface (0.444 Mbit/sec.) ISDN, public-switched and leased digital traffic through multipoint bridges. This is necessary to bring the gamut of switched and dedicated traffic onto a common videoconferencing network from remote corporate and business partner sites.

Picturejet Corp. caught up to competitors Compression Labs, Inc. and Videote-

lecom last month when it announced its multipoint bridge — the M-8000 — with in-band audio capabilities.

Bandwidth audio with video traffic "means that users can pay for just two 56K bit/sec. lines instead of requiring a third line and a separate phone call for the audio," observed Greg Cline, communications technology services program manager at Information Strategies Group, Inc., a research firm in Vienna, Va.

Video equipment costs have dropped over the last decade, from approximately \$500,000 to roughly \$50,000 per location, Information Strategies said. The firm predicted the video systems market will see a 60% compound annual growth rate through 1993 but will then slow as videophones are widely introduced.

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## Travelers

CONTINUED FROM PAGE 77

Traditional SNA host systems have plenty of capacity planning tools, but those for client/server LAN systems are lagging far behind.

The benchmarks, written in C, simulate user loads to determine server capacity limits in terms of the number of users and response times on a given system.

This takes the guesswork out of server selection, and the company saves money by not overpurchasing horsepower for a particular job. More importantly, The Travelers has produced an OS/2-based emulation software tool — Aegis — to assist in OS/2 workstation management.

Delveccio said he likes Aegis to a remote job-entry system. Via IBM's SPM/2 software, Aegis examines internal performance of target machines in a LAN environment and monitors I/Os per second, data fluctuations and CPU rates.

At present, Aegis is configured to monitor OS/2 servers. The gathered data is used for problem management, altering configuration parameters and determining errors. By allowing systems to communicate on a peer-to-peer named pipes system, the program does not require server intervention to complete an I/O.

"Any command that can be executed from an OS/2 command line can be executed from Aegis," Delveccio said.

By year's end, the company plans to deliver several more programs for remote management, including stall detectors, application timers and generic alert mechanisms.

The key, Delveccio said, is in keeping the software "easy to use and easy to learn." The objective is to provide glass-house support in a LAN environment.

"We assumed a risk, we spent some money. This was an integral part of our overall systems support plan," he said. "We've minimized the risk of rolling out mission-critical OS/2 applications by providing the required support structures."

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# Frame-relay products take center stage at TCA

BY ELLIS BOOKER  
ON STAFF

SAN DIEGO, Calif. — There was an unmistakable surge of excitement two weeks ago at Tele-Communications Association '91 at the prospect of cheaper LAN-to-LAN interconnections using frame relay, a fast-packet protocol for data communications.

Equipment vendors and carriers arrived with frame-relay products, prices and service plans. Meanwhile, some analysts projected an historic swing away from private leased lines, given the bandwidth flexibility and cheaper prices prom-

ised by frame-relay networks.

"It'll trigger the most extensive wave of changes [in private network design] since the mid-1980s," said Thomas H. Jones, vice president of marketing at Netra Corp. in Herndon, Va.

Other observers, however, were more conservative. "People will not all simultaneously or even in a period of several years make the move to [public network-based] frame relay," predicted Philip R. Evans, director of telecommunications at FMC Corp.'s corporate data center in Dallas. Some special applications will still demand dedicated facilities, Evans said.

One of the problems for potential

frame-relay users, Evans said, is the lack of network monitoring, simulation and design tools. Properly loading a frame-relay network is important to avoid throughput-compromising congestion, a problem encountered by some early adapters of frame relay on private networks.

Among the vendors introducing frame-relay products were the following:

- Fastcomm Communications Corp. in Sterling, Va., announced availability of Fastpak, a line of frame-relay hardware products. Fastpak includes a proprietary compression algorithm for reducing Synchronous Data Link Control traffic on T1 lines by over 70%, Fastcomm said.

- Gandalf Systems Corp. in Cherry Hill, N.J., introduced the Infotron 2000, a family of branch, region and central-site communications switches.

- Dynatech Communications, Inc. announced plans for frame-relay software on its high-end packet switches. The software upgrade is expected to be available in December for \$5,000.

Other announcements centered on Integrated Services Digital Network (ISDN) products, including the following:

- UDS Motorola in Huntsville, Ala., brought seven wide-area network products to the show, including the \$1,395 TA120 ISDN terminal adapter, which links a personal computer with Basic-Rate Interface ISDN central office telephone switches from either Northern Telecom, Inc. or AT&T.

- Ricoh Corp. claimed a first with its FAX7000, what it called the first Group 4 fax with a built-in ISDN interface. Available this month, the product will sell for \$14,495 and will also be available as a \$3,500 upgrade for FAX7000 models.

- Republic Telecom Systems in Boulder, Colo., introduced its RLX-4N SD packet multiplexer, updated with software intelligence, to access carriers switched digital 56K- and 64K bit/sec. services for domestic and international networks.

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## Router market

CONTINUED FROM PAGE 77

high-speed local- and wide-area inter-

faces.

Dugan commented that Protom's one point of differentiation among many vendors who "all support all the protocols and interfaces" is that it uses a translation bridging scheme for transporting traffic between FDDIs.

This means the bridge converts Ethernet packets into FDDI packets and vice versa, rather than enveloping one type of data packet inside another to make the two networks think they are speaking the same protocols. The latter method, known as "encapsulation," tends to be more overhead-heavy.

At the low end, Hewlett-Packard Co. and Kyrlex, Inc. last week announced work-group routing products. HP said its \$9,000 four-LAN Ethernet/multi-protocol router — announced in June — will support X.25 traffic and Open Shortest Path First (OSPF) on Nov. 1. OSPF is a way for routers to determine the most network-efficient path for data to move to its destination and allows interoperability among different vendors' routers.

"HP is attempting to figure out some of the router pricing issues," Dmbeck said. "Their intent is to start at the bottom, make routing less complex and make the cost proportional to the complexity."

However, Janet L. Hyland, director of network strategy research at Forrester Research, Inc. in Cambridge, Mass., said HP's router is "expensive for the low end." She acknowledged, though, that "every piece of HP equipment I've ever seen is elegantly engineered. HP recognizes that its reseller distribution strategy means they have to make this stuff as easy as possible for resellers to install."

HP said its routers would support frame relay in the second quarter of next year and a Switched Multimegabit Data Service interface in late 1992 or early 1993, depending on availability of the service from local telephone companies.

NEW PRODUCTS

OS/2 networking

Essex Systems, Inc. has announced Release 1.3 of TCP/2, its software package providing Transmission Control Protocol/Internet Protocol support for OS/2-based personal computers. TCP/2 can be run in an OS/2 Presentation Manager window under all versions of OS/2. The new version can run concurrently with Novell, Inc.'s Netware 1.3.

A single license for the TCP/2 software package costs \$475. A DOS-based version is also available for \$375. Essex Systems One Essex Green Drive Peabody, Mass. 01960 (508) 532-5511

Electronic mail

Business Partner Solutions, Inc. has introduced AS/Messenger for the IBM Application System/400 platform.

With AS/Messenger, messages can be sent from an AS/400 to paper, handheld terminals, voice-response units or another AS/400. Two-way communication is possible with some devices.

During times of inactivity, a periodic system pulse can be sent to ensure that the system is functioning properly.

Tiered pricing ranges from \$995 to \$23,622, depending on hardware platform and modules selected.

Business Partner Solutions Suite 214 2 Salt Creek Lane Hinsdale, Ill. 60521 (708) 323-9292

Modems

Telebit Corp. has announced a high-speed V.32bis modem, the Telebit T3000.

The modem provides an interface rate for throughput as high as 57,600 bit/sec., the company said. It also includes a list of 15 commonly used configurations that can be selected from the front panel.

The Telebit T3000 is priced at \$1,095.

Telebit 1315 Chesapeake Terr. Sunnyvale, Calif. 94089 (408) 734-4333

Best Data Products, Inc. has announced the Smartline 9624FL, a class II fax/modem priced at \$299.

The device features 9,600 bit/sec. send-and-recv fax capability and 2,400 bit/sec. data modem functionality. It is upgradeable for use with Microsoft Corp.'s Windows 3.0.

The company also introduced the Smartline Macfax model for use with Apple Computer, Inc. Macintosh systems. It also costs \$299.

Best Data Products 9304 Deering Ave. Chatsworth, Calif. 91311 (818) 773-9600

Gateways, bridges, routers

Intercomputer Communications Corp. has released ICC/RLN, a protocol-independent remote access product.

ICC/RLN allows remote personal computer users to connect to a local-area network over dial-

up lines. A single dedicated server or PC can simultaneously connect up to 16 remote nodes to the LAN, with each remote PC having a unique Ethernet address.

Pricing for a two-client system is \$380. A 16-port system, including an adapter board for the server, costs \$6,210.

ICC 8320 Montgomery Road Cincinnati, Ohio 45236 (513) 745-0500

Systems network architecture

Sync Research has announced the Group Poll Concentrator (GPC) for its line of Systems Network Architecture inter-networking products.

The company's SNA Network Access Controller (SNAC) connects non-Token Ring compatible controllers to Token Ring networks.

The GPC performs all polling functions for units connected to the controller, allowing the host to poll the SNAC once rather than polling each physical unit attached to the controller. This reduces network overhead significantly, according to the company.

The SNAC/GPC is priced from approximately \$10,000 to \$15,000.

Sync Research 7 Studebaker Irvine, Calif. 92718 (714) 588-2070

Local-area networking software

Pinnacle Publishing, Inc. has announced an upgrade to Netlib, a library of networking functions

for Nantucket Corp.'s Clipper development environment.

Netlib 5.2 offers multiple-record locks, data encryption, print-queue management and other enhancements.

Pricing is set at \$299. Pinnacle Publishing 28621 Pacific Highway South Federal Way, Wash. 98003 (206) 941-2300

Terranetics has announced Safe-deposit, an unattended-backup utility for Apple Computer, Inc. AppleShare networks.

Safe-deposit continuously backs up files residing on the server. It can be used in conjunction with the company's Auto-back product, which uses the server to create backup copies of files residing on client Macintoshes on the network. The product automatically backs up those files that are being altered.

Licensing costs \$595 per server kit or \$4,500 for a 10-server pack.

Terranetics Suite 413 1538 N. Martel Ave. Los Angeles, Calif. 90046 (818) 446-7692

Local-area networking hardware

Megahertz Corp. has redesigned its external and internal Token Ring connectors for Toshiba America, Inc. portable computers.

Both versions offer 16M/4M bit/sec. operating speeds. The adapters connect directly to the system bus, offering full-speed performance, the company reported. The card provides both a DB-9 connector and an RJ-45

connector. The price for the internal card is \$799. The external adapter costs \$999.

Megahertz 4505 S. Wascash Blvd. Salt Lake City, Utah 84124 (801) 272-6000

Chipcom has announced a 10Base-T intelligent work group hub for small Ethernet networks.

The hub provides 12 ports and supports the Simple Network Management Protocol on unshielded twisted-pair Ethernet local-area networks. It was designed as a low-end alternative to the company's Online System Concentrator fault-tolerant wiring hub.

The 10Base-T Workgroup Hub costs \$2,295.

Chipcom Southshore Office Park 118 Turnpike Road Southboro, Mass. 01772 (508) 460-8900

Panamax has produced the Net-stop Uninterruptible Power System for local-area networks.

The system includes models ranging from 450VA to 1,300VA. A network interface is included with all models except the 450VA version.

Pricing ranges from \$429 to \$1,199.

Panamax 150 Mitchell Blvd. San Rafael, Calif. 94903 (415) 499-3900

Madge Networks, Inc. has introduced a 16M/4M bit/sec. Token Ring adapter card for personal computers.

The Madge Smart 16/4 PC Ringnode adapter is an 8-bit card that works with AT/XT-bus and Extended Industry Standard Architecture personal computers. It is software upgradeable. The company also offers 32-bit and 16-bit cards.

The 8-bit card costs \$795 or \$695 in quantities of 10.

Madge Networks Suite 150 42 Airport Pkwy. San Jose, Calif. 95110 (408) 441-1300

Milan Technology Corp. has introduced a print server that was developed for Unix networks running Transmission Control Protocol/Internet Protocol.

The Expert server simplifies printer installation and configuration. The server includes a 16-bit processor and achieves sustained throughput of 30K bytes/sec., the company said.

The product supports two printer connections and three types of Ethernet cabling.

Expert costs \$899. Milan Technology Suite 3 67 E. Evelyn Ave. Mountain View, Calif. 94041 (415) 968-9000

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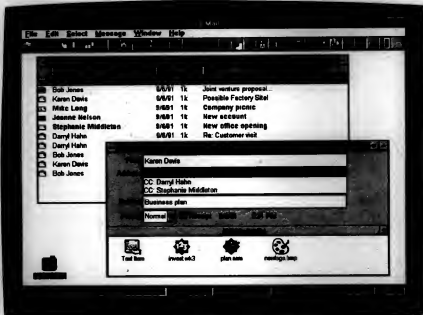
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PC WEEK 10/22/90



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*"Lotus' cc:Mail for DOS 3.2 and its Windows version 1.0 offer everything you need in messaging mail management and connectivity. Intelligent menu organization makes both DOS and Windows versions a breeze to learn and use. It's clearly a best buy."*  
PC WORLD 9/91

## cc:Mail from Lotus

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# MANAGER'S JOURNAL

## EXECUTIVE TRACK

The U.S. Internal Revenue Service has announced three new appointments to information systems-related positions:



Michael S. Bigelow was named deputy assistant commissioner for returns processing in Washington, D.C. He succeeds Chuck Guy, who became district director in Wilmington, Del.

Bigelow had been the IRS' deputy assistant commissioner for IS management since last year. Before that, he was assistant director of IRS service centers in Philadelphia and Ogden, Utah. He joined the IRS in 1968 and has completed the IRS executive selection and development program.



Bruce L. Pitt was named to replace Bigelow as deputy assistant commissioner for IS management. He will assist the chief information officer in managing the IRS tax-processing systems and in developing data administration requirements governing all tax-processing initiatives.

Since 1988, Pitt has been assistant regional commissioner for data processing in the IRS central region in Cincinnati.

After completing the IRS executive selection and development program in 1985, Pitt was assistant director at service centers in Kansas City, Mo., and Fresno, Calif.

Henry O. Lassar Jr. was appointed assistant regional commissioner for data processing at the IRS central region office in Cincinnati, replacing Pitt. The regional office processes returns from Indiana, Kentucky, Michigan, Ohio and West Virginia.

Lassar has been assistant director at the Atlanta service center since 1989. He completed the executive selection and development program in 1987 and became assistant to the director of the Memphis service center.

## Password: User awareness

Companies promote importance of data security with varied approaches

BY MICHAEL ALEXANDER  
OF STAFF

In the weeks leading up to Friday, Sept. 13, the computer security troops at Metropolitan Life Insurance Co. launched a wide-scale campaign to alert computer users to the impending dangers of the Jerusalem, Friday the 13th and other computer viruses that were set to go off on that fabled unlucky day.

With 18,000 personal computers in-house and about 11,000 laptops in the field, Met Life had plenty of reasons to worry. However, when the day ended, only two PCs had been infected.

It is an extraordinary success story—one that is often overlooked these days when viruses are as common as colds but far more damaging. The main reason so few machines were hit was Met Life's on-going computer security awareness program, says Fran Smyth, assistant vice president of information systems risk management at Met Life.

New York-based Met Life is one of a growing number of corporations that have orchestrated formal computer security awareness programs to instruct computer users on how to safeguard the integrity and confidentiality of corporate information.

Computer security awareness is a "topic whose time has finally come,"

according to Cathy Wehhausen Engelman, a member of the technical staff of the computer security group at AT&T Bell Laboratories in Murray Hill, N.J.

There has been "a dramatic change" in the number of companies introducing computer security awareness programs in recent years, but the topic of discussion is still "the new kid on the block," Engelman says.

with users and managers from a variety of key organizations within the companies, to promote computer security awareness and help ward off viruses as well as other problems.

There are 40 members of the information systems security council at Eastman Kodak Co. in Rochester, N.Y. The council's mission is to create posters, flyers and other media and host computer security awareness seminars, says John Welsh, director of the IS security service at the company.

The council consists of "a mix of people, not just those who are totally focused on computer operations," Welsh says. "We are also linked to our technology development organization to get the security on in the water as soon as new things are being developed in the company."

Most companies have basic security policies or building blocks in place before establishing a council, Welsh says. The basics, typically endorsed by senior management, cover a gamut of security issues, from limiting data access to authorized users to reminding users how often data should be backed up.

Getting the endorsement from management for the council's efforts is critical, he says. "The endorsement itself is what prompts most people to turn to us and say, 'Please come to talk to us about this,'" he says.

Corporations are using many techniques to promote computer security

Continued on page 50



John Johnson

The key to a successful awareness program is to develop a multimedia campaign with a theme that fits the company's culture, she says. "You may want to plan a year at a time and maybe have four themes during the year," she says.

Increasingly, companies are turning to security units or councils, populated

## IS in Europe continues to feel squeeze

BY ROSEMARY HAMILTON  
OF STAFF

Like many U.S. information systems executives, European managers reported continued pressure to control costs because of tough economic conditions.

Nearly a third of European IS managers recently surveyed said their 1992 budgets will not increase from this year's spending level. Another 10% expect a decrease in next year's budget from 1991.

The survey, completed by International Data Corp.'s (IDC) European Research Center in London, was released at the European Information Technology Forum held in Venice late last month and sponsored by IDC. The results are based on 100 interviews with IS managers throughout Europe.

While the bulk of those surveyed said budgets would stay at current levels or be cut, another third of the re-

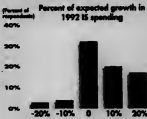
spondents said they expect to increase spending by between 10% and 20%. This reflects the different degrees of economic doldrums in European regions, said Jim Beveridge, managing director of IDC's European Research Center.

"Visit Northern Europe, Scandinavia and the UK and your audience is depressed," Beveridge said. "Fifty percent of your audience is distracted, and they are worrying if they are going to have a job next year. Visit Central Europe, Austria, Germany and Switzerland, and people are buoyant."

The results also "dovetail the overall market," said Amit Chaudhuri, a research analyst at the European Research Center. Based on another IDC

### Stagnation

Information systems spending in Europe is weak, with more than one-half of the surveyed user firms expecting little or no growth in 1992



Source: International Data Corp.

CV Chart: Janet Greenlee

report completed in August, the Western European IS market is expected to grow by about 7.3% next year from the 1991 total of \$106 billion.

## Password

CONTINUED FROM PAGE 89

awareness, including the following:

- **Posters.** "Reflect your theme in different ways — recognize that people are attracted by different approaches," Englishman advises. "One person might love a cartoon, while another thinks that that is making light of the situation."
- **Booklets and flyers.** Publications for users may emphasize various aspects of security, such as how to protect against getting a virus and how to determine when a PC has been infected. The booklet or flyer will have greater impact if it is addressed and sent to each employee by internal mail rather than by merely dropping them on desks, Englishman adds.
- **Videos.** There are a variety of off-the-shelf, 10- to 15-min. videotapes that address computer security. There are enough of them out there that you can find ones that reflect your theme. Larger companies often opt to create their own videos. "Video is the state of the art," Englishman says. "If you don't have a video you don't rate because that is how you communicate nowadays."
- **Articles in company newsletters.** They may discuss computer security or publicize upcoming events organized to promote security.
- **Employee "trinkets."** Englishman advocates giving employees items such as pens, stickers and antistatic screen cloths — with a security message attached.

**T**HE SPREAD OF personal computers and local- and wide-area networks in recent years has spawned a concern that corporate information is not as well protected as it once was when it resided in the data center.

There are several reasons for the growing interest in fostering computer security awareness in a full-fledged program, several corporate computer security chiefs say. First, the spread of personal computers and local- and wide-area networks in recent years has spawned a concern that corporate information is not as well protected as it once was when it resided in the data center.

Senior management is also taking a closer look at security because of both corporate and personal liabilities that may ensue if valuable information is lost or falls into the wrong hands.

"Computer security is directed very much toward the standard of 'due care,' which says whatever is appropriate or available in the same industry," Englishman explains. "Management is held responsible for at least implementing that level of security."

Met Life has been touting security to users for more than eight years, but it was not until it set up a "security awareness unit" about three years ago that the effort was formalized, Smyth says.

"There are five people in the unit, and they are charged with keeping aware of new developments, techniques, programs, products and with creating an on-going awareness program," Smyth says.

## Well-armored with security awareness

**E**ven though employees were greeted by two knights in shining armor as they arrived for work at Met Life's New York headquarters on the morning of Sept. 27, it was business as usual at the life insurance company.

The knights handed out toothbrushes, affixed with the message: "Brush your computer password like your toothbrush — change it often and don't share it."

Met Life regularly sponsors computer security awareness days to educate its employees about the potential risks to a company's data. Most employees had already known from the posters in the elevators, articles in company newsletters and other publicity that this would be one such event — but the

medieval motif was an unexpected creative touch.

Later that morning, employees attended a seminar in the company auditorium that included a presentation by computer security expert Wm. Schwartz, author of *Terminal Compromise*, and the showing of videos about computer security. The presentation was videotaped and distributed to 10 locations across the country.

Employees also received computer security reference cards intended to be placed alongside their PCs and antiviral software. The company's officers received copies of *The Cuckoo's Egg* by Clifford Stoll, a speaker in an earlier computer security awareness seminar.

MICHAEL ALEXANDER

A few well-chosen words about your network

"Unisys... has no rival major systems vendors building an OSI-based line."

— Patricia Seybold's Network Monitor

## Bergstein leaves CSC for smaller firm, more excitement

BY CLINTON WILDER  
CW STAFF

CHICAGO — While his former employer was announcing the General Dynamics Corp. megadeal that he helped consummate [CW, Sept. 30], consultant Melvyn Bergstein was already settling into his new company.

The outspoken Bergstein, who left Andersen Consulting two years ago to join Computer Sciences Corp. (CSC), recently

joined small systems integrator Technology Solutions Corp. (TSC) here as executive vice president, the No. 2 position under founder and Chairman Al Beedie. Beedie, a former Arthur Young & Co. consultant, started TSC three years ago. TSC launched its initial public stock offering Sept. 20.

"CSC was a good company, but it's a big company," Bergstein, 49, said when contacted late last month. "The opportunity to get into a small, but growing com-



Bergstein: "CSC was a good company, but it's a big company"

ny at this stage of my career was irresistible. It's exciting as hell."

TSC is a \$50 million, 330-employee

firm focusing on integration projects in the manufacturing, consumer products and financial services industries. Bergstein will initially concentrate on consumer products.

Bergstein can also remain closer to his home in the Chicago suburbs, which he continued to own as CSC senior vice president while working primarily out of the CSC Index offices in Cambridge, Mass.

### MANAGEMENT SHORTS

## SIM honors L.A. students

The Southern California chapter of the Society for Information Management has awarded academic scholarships to six Los Angeles-area high school students. The students, all of whom attend California State University at Los Angeles, were selected for their academic excellence and interest in computer systems technology and data processing. "Each recipient displays outstanding talent and strength in the information technology area," said M. Victor Jeanette, chapter chairman. Each student received a \$500 grant. The winners were Humberto Garza and Rafael Moran of Garfield High School, Jose Ribbes of Bell High School, Cynthia Paleos of Roosevelt High School, Arisoto Salomon of Wilson High School and Joseph Soto of Lincoln High School.

Computer Sciences Corp., right on the heels of its huge 10-year outsourcing contract with General Dynamics Corp. [CW, Sept. 30], announced a five-year pact to maintain and operate systems for the Defense Information Systems Agency. The contract is valued at \$66 million if all options are exercised. CSC's Systems Engineering Division in Falls Church, Va., will oversee the systems that enable the Office of Secretary of Defense Dick Cheney and the Joint Chiefs of Staff to command and control military forces worldwide.

Susan Antonini of the city of Phoenix received the Office Automation Society International's (OASI) Grace M. Hopper Award for her paper describing the city's records imaging system. Richard J. Neufeld of Richard J. Neufeld Associates in Flemington, N.J., received the OASI's president's award, and Robert S. Emmel at Andersen Consulting in Chicago received the newly named Jackie S. Potts award.

The OASI also issued a call for papers for its conference, to be held June 7-10, 1992, in Cincinnati. Abstracts are requested on the topic: "Answers to the Office Automation Society Jigsaw" and may include technologies such as electronic and voice mail, networking, optical storage and neural networks. Submissions are due Dec. 1 and should be mailed to OASI, P.O. Box 374, McLean, Va. 22101. The phone number is (703) 821-6650.

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## COMMENTARY

Clinton Wilder

## Ill wind for fate of IS?

*"Through the management systems of measurement and compensation that they implement, executives send strong signals as to what is really important and what is not."*

— Consultant Michael Hammer in the 1991 *Computerworld* Premier 100

As companies face the brutal challenge of making IS more effective in lean recessionary times, Hammer's question of "What is really important?" will be asked time and time again. For the future of IS implementation and management, I sincerely hope the answer will not always be, "Cutting costs and boosting the stock price." General Dynamics' decision two weeks ago to contract its entire IS function to Computer Sciences is a momentous one. Whether it is the right decision can only be answered by the same measuring stick that applies to any long-term outsourcing pact: "Time will tell." But some of the company's motivations for entering such an agreement raise some potentially unsettling questions for the IS community.

General Dynamics was rated No. 1 in IS effectiveness in the aerospace industry by the *Computerworld* Premier 100 for two straight years. But the \$10 billion firm slipped considerably in this year's rankings, and a big reason was its \$578 million loss in 1990 — the fifth largest deficit in the Fortune 500.

So when William A. Anders took over as chairman at the beginning of this year, he was a man on a mission. General Dynamics took a hard look at itself in a shrinking defense marketplace and decided it had to get smaller faster. The work force was slashed by about 15%, with 1,000 jobs cut in the Data Systems Division alone.

Anders also instituted a plan of incentives for senior executives, including IS chief Asaph Hall, that was tied directly to the company's stock price. The message was clear: Bottom-line, balance-sheet-oriented decisions — the kind that Wall Street loves — would be rewarded.

Anders' strategy has worked brilliantly. General Dynamics' stock, which has traded as low as \$19 per share in the past year, reached a new high of \$49.50 two days after the Computer Sciences deal was announced.

General Dynamics' situation cannot be applied to every company. According to Hall, the firm weighed the benefits of continuing to own and maintain a huge IS infrastructure, with an annual budget of more than \$500 million, while the company itself was shrinking.

Hall also talked of the frustration of not being able to hire top-notch technology talent because of budget constraints. Finding and hiring good people is both more difficult and more important than ever for any IS shop, and Hall reasoned that Computer Sciences will be in a better position than General Dynamics

to do that over the next 10 years.

Nonetheless, a red flag is raised by the implication that the IS infrastructure — people included — can become a liability. "Let's get it off the balance sheet" does not sound like a strategy for long-term competitive success with IS.

Business executives may respond, "Well, that sounds fine in theory. But we've poured millions into computers over the years, and where's the payback? Where's the value added? Those IS folks will talk to me in a language I can't understand, and I'm fed up. We're in a recession right now, and I've got a business to run."

Like it or not, those attitudes still prevail within hundreds of executive suites across the country. And you know what?

Most of the time, they're absolutely right. Their IS executives have not successfully communicated their role and their benefits. In those cases, there are two attractive options: Either outsource or bring in a new IS chief.

In corporate climates such as this, the easiest way for an IS chief to get senior management attention — and praise — is to show bottom-line results. And because strategic or so-called soft benefits are virtually impossible to quantify with traditional accounting methods, IS expenses present an inviting target.

"Often it seems like the only way you can prove you're doing a good job in IS is to reduce costs," says Thornton May, a young consultant at Nolan, Norton & Co. In his inimitable style, May calls this the

"Cosan the Technologist" approach.

In order for companies to achieve IS success in the '90s, the business and IS sides of the house must meet each other halfway. IS certainly must keep costs under control, resist technology for technology's sake, focus on the most cost-effective approaches — and even outsource pieces of the operation if it makes sense.

But business leaders must also realize that there is more to long-term global market competition than balance sheets and stock movements. The strategic use of information should never be relegated to secondary status.

Wilder is *Computerworld's* senior editor, manager, next.

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## CALENDAR

The American Gas Association/E Edison Electric Institute will hold their 39th Information Systems Conference Nov. 3-6 at the Walden Renaissance hotel in Los Angeles. Focusing on the use of IS in the utilities industries, the conference features tracks in applications development, applications, operations, technical environment and management/strategic issues. Most sessions feature IS professionals from utility companies presenting case studies and real-world experiences.

For more information or to register, contact Jeffrey Kirstein, Edison Electric Institute in Washington, D.C., at (202) 508-5433.

## OCT. 27 NOV. 2

Building the 1988 Data Model, Arlington, Va., Oct. 28 — Contact: Association of Human Resources Systems Professionals, Dallas, Texas (214) 661-3727.

The Hammer Re-engineering Conference, Boston, Oct. 28-30 — Contact: Hammer Forum, Cambridge, Mass. (617) 354-6305.

Electronic Monitoring '91, Telling Case of Business, New Orleans, Oct. 29-30 — Contact: Electronic Mail Association, Arlington, Va. (703) 875-6000.

CNC '91 and A/P/C Systems, Nashville, Oct. 30-31 — Contact: Kelly Butler, A/P/C Systems, Charlotte, N.C. (713) 444-8023.

Symposium '91, Lake Mead Vista, Pa., Oct. 30-Nov. 1 — Contact: Ashley Passen, Gartner Group, Inc., Stamford, Conn. (203) 967-4797.

New Media in the '90s, Boston, Oct. 29 — Contact: July Thompson, Media Source, Inc., San Francisco, Calif. (415) 441-2864.

Telecom Link LAN Bridges & Routers, San Jose, N.J., Oct. 29-30 — Contact: Virtual Systems of New Jersey, Inc., Parsippany, N.J. (609) 449-7899.

1991 Marketing Conference, New York, Oct. 29-30 — Contact: The Conference Board, New York, N.Y. (212) 339-6290.

The Third Annual Conference & Exposition on E-commerce: Security and Business Opportunities, Atlantic City, Oct. 30-Nov. 1 — Contact: Jack Berman, Delaware Valley District, Brewery Information Exchange Group, Inc., Cherry Hill, N.J. (609) 773-0705.

State Expo International, New York, Oct. 30-Nov. 1 — Contact: National Business Exposition, New York, N.Y. (212) 391-9111.

CD-ROM Conference and Exhibition, Los Angeles, Oct. 31-Nov. 1 — Contact: Knowledge Industry Publications, West Plains, N.Y. (914) 335-9127.

IS Forum Technology for the '90s, Pomona, Calif., Nov. 1 — Contact: Jay Korman, Jay Korman Applied Systems, Inc., Pomona, Calif. (915) 861-8900.

## NOV. 3-9

User Services Conference, Seattle, Nov. 3-4 — Contact: Sheryl Rosenberg, University of Washington, Seattle, Wash. (206) 543-0422.

Apparelworld '91, Cambridge, Mass., Nov. 3-4 — Contact: Apparel Technology, Inc., Cambridge, Mass. (617) 497-9010.

13th Annual Data Training Conference & Exposition, Atlanta, Nov. 3-7 — Contact: Conference Department, Boston, Mass. (617) 543-6546.

Business Support and Executive Information Systems & Management Perspectives, Cambridge, Mass., Nov. 4-5 — Contact: Database Support Technology, Inc., Cambridge, Mass. (617) 354-6400.

Association for Services Management (AFSM) International's Eighth Annual Senior Executive Conference, Edinburgh, Scotland, Nov. 4-8 — Contact: AFSM International, Fort Worth, Tex. (817) 779-7887.

Informal Management Conference & Exposition, New Orleans, Nov. 4-8 — Contact: Data Processing Management Association, Park Ridge, Ill. (708) 825-8124.

Vision '91/Fall, New York, Nov. 4-7 — Contact: VISA, Houston, Texas (713) 874-6827.

Downsizing/Rightshoring Corporate Computing, Washington, D.C., Nov. 4-7 — Contact: Todd Langston, Boston University Corporate Education Center, Tyngsboro, Mass. (508) 649-9731.

C-Power '91, Boston, Nov. 4-8 — Contact: The Wang Institute of Boston University, Tyngsboro, Mass. (603) 649-9731.

Texas A&M's User Group, Dallas, Texas, Nov. 4-8 — Contact: Scott Shaw, Texas A&M User Group, Dallas, Texas (214) 475-5354.

Betty Madsen Technology and Applications, Houston, Nov. 4-8 — Contact: Betts Data Systems, Rockville, Md. (301) 763-1386.

The Mac Show, King of Prussia, Pa., Nov. 5-6 — Contact: Ad Lib Advertising, Dearborn, Mich. (313) 466-9111.

Scan Tech '91, Dallas, Nov. 5-7 — Contact: Automatic Identification Manufacturers USA, Pittsburgh, Pa. (412) 903-8208.

Broadband Networks, Washington, D.C., Nov. 5-6 — Contact: Technology Transfer Institute, Silver Spring, Md. (301) 364-4900.

Canadian Information & Image Management, Toronto, Nov. 5-7 — Contact: World Image Corp., Wellesley Hills, Mass. (617) 738-4005.

Fourth Annual Management Forum, Redding, Calif., Nov. 6-7 — Contact: Microprocessor Forum, Berkeley, Calif. (415) 549-4300.

8822 Detail Conference, New York, Nov. 6-7 — Contact: George Connors, DBI & SIG, Union Group, New York, N.Y. (212) 696-7565.

London '91, Atlantic City, Nov. 7-9 — Contact: London Business School, London, England, U.K. (703) 279-2665.

## NOV. 10-16

Managing Apple Computers in Information Systems, Phoenix, Nov. 10-13 — Contact: Managing Apple Computers in Information Systems, Chicago, Ill. (312) 644-6420.

The East-West High-Tech Forum, Walnut, Penn., Nov. 10-13 — Contact: Education Builders, Inc., New York, N.Y. (212) 832-1730.

Fourth American Telecommunications Association, Houston, Nov. 11 — Contact: Alan M. Oller, Comm. Inc., Houston, Ill. (708) 687-6600.

Workshops, Boston, Nov. 11-15 — Contact: The Wang Institute of Boston University, Tyngsboro, Mass. (603) 649-9731.

Industry On Manufacturing Engineers Authorized, Chicago, Nov. 12-14 — Contact: East Campus, The Society of Manufacturing Engineers, Dearborn, Mich. (313) 871-8777.

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Expansion Slots	3 open 16-bit ISA	3 open 16-bit ISA	3 open 16-bit ISA	3 open 16-bit ISA	3 open 16-bit ISA
Hard Disk Drive	Optional or 20MB HD	Optional or 20MB HD	Optional or 20MB HD	Optional or 20MB HD	Optional or 20MB HD
Ports	2 serial, 1 parallel	2 serial, 1 parallel	2 serial, 1 parallel	2 serial, 1 parallel	2 serial, 1 parallel
LAN Data Controller	Combined IDE/SCSI/RAID controller	Combined IDE/SCSI/RAID controller	Combined IDE/SCSI/RAID controller	Combined IDE/SCSI/RAID controller	Combined IDE/SCSI/RAID controller
Video	486SX VGA card	486SX VGA card	486SX VGA card	486SX VGA card	486SX VGA card
LAN Features					

\*The Z-486/33ET has been tested for compatibility with "Novell NetWare" and "Microsoft Windows".

The Z-486/33ET has been tested for compatibility with Novell NetWare V3.11 and V3.12 and Microsoft Windows 3.11.

Z-386SX/20



Z-486SX/20E



Z-486/33E



Z-486/33ET and Z-LS



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September 11, 1991

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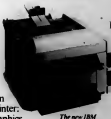


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# PRODUCT SPOTLIGHT

## TCP/IP

*Effective, yes. Well supported, definitely. But if you're looking for a graceful way to link PCs to hosts, you'd better wait a while*

BY SHARON FISHER

**T**here's an old saying about a wilting bear that also applies to today's implementations of Transmission Control Protocol/Internet Protocol (TCP/IP). The astounding thing is not how gracefully it performs but that it performs at all.

Somewhat clumsy but effective: This is what people have expected TCP/IP to be, and that's understandable, considering the acrobatics entailed in its job description. What else can you expect from a set of protocols intended to impose a common language on diverse machines and networks in order to get them to communicate?

Because so many people need to connect diverse computers — not to mention that this protocol set has garnered a lot of support from major vendors — TCP/IP has grown pretty popular. Estimates vary, but it's safe to say that there are 12,000 to more than 30,000 subnets with TCP/IP implemented, with each subnet containing dozens of computers of any type.

TCP/IP is not for everyone, however, especially now that personal computers have entered the scene. Many corporations are now looking at using this protocol to link their PC local-area networks into the rest of the enterprise to hosts from the likes of IBM and Digital Equipment Corp. or to Unix-based servers.

This is certainly not impossible, but anyone who has installed TCP/IP has a story to tell, whether it's incompatibilities among vendor implementations, the difficulty of finding the right

Fisher is a San Francisco-based freelance writer specializing in data communications.



Mark Beaulieu

interface products for the different environments or the problems it can cause users, who must get used to a whole new operating environment.

Such complaints have set vendors scrambling to create TCP/IP software for PCs that quells what have been seen as

TCP/IP deficiencies (see story page 98).

The truth of the matter is, TCP/IP requires some getting used to. While the protocols interoperate well between machines, there's more to communications than simply having compatible protocols, especially when other types of PC networks are already in place.

Implementing a TCP/IP protocol stack on the PC does allow it to exchange files via the File Transfer Protocol (FTP), log on to a computer remotely via the Telnet protocol and (in some cases) exchange electronic mail with other systems that also sup-

port TCP/IP via the Simple Mail Transfer Protocol (SMTP).

Of the two dozen or so vendors selling TCP/IP PC software, only some support SMTP, including Frontier Technologies Corp., FTP Software, Inc., Sun Microsystems, Inc., Netmanage, Inc. and Wollongong Group, Inc. Each vendor (with the exception of Novell, Inc., which offers a TCP/IP protocol stack under Netware 3.11) supports Telnet as well as FTP.

What TCP/IP doesn't do is provide all of the features that users are accustomed to in DOS. Users familiar with the wide variety of applications that can run over network operating systems may be disappointed by TCP/IP's lack of similar support.

Not only is there less application variety, but those familiar with a PC network operating system may also find TCP/IP applications a bit primitive.

"There is just beginning to be print services that are as good as Netware — or even half as good," says Dan Lynch, president of Interop, Inc., a Mountain View, Calif.-based organization that sponsors educational conferences in interoperability.

For example, there is no coordinated print service protocol, meaning each TCP/IP package may perform this service differently. The lack of a standard print service also inhibits the ability to control access to network printers.

The basic applications — E-mail, file transfer and remote log-on — are pretty well standardized from vendor to vendor. However, the application programming interfaces (API) are not, says Tim Senow, general manager of network software at SSDS, Inc., a systems integrator in Littleton, Colo.

With nonstandardized APIs, two TCP/IP-linked systems on the network can communicate in terms of raw data, but the applications that run on top of them may not.

Novell is one vendor that has worked to solve this problem. Its TCP/IP protocol stack under Netware 3.11 supports standard Unix application interfaces such as Berkeley's sockets and AT&T's Streams.

### NFS and interfaces

One application guaranteeing support among TCP/IP software vendors is Network File System (NFS), which allows users to access files residing on Unix systems. NFS is also able to access files on mainframes, Frontier, FTP, Sun, Wollongong, Novell and Beame & Whitelide Software Ltd. offer NFS support.

One disadvantage of Sun's PC NFS is that it requires substantial memory, and users can't

Continued on page 98

**THE TRUTH IS, TCP/IP takes some getting used to. There's more to communications than simply having compatible protocols.**

## INSIDE

### Planning for OSI

Four ways to prepare your network for some level of OSI. Page 99.

### Voices of Experience

TCP/IP users share their trials and tribulations. Page 103.

### Product Guide

A listing of PC-based protocol stacks and applications. Page 106.

## A working definition

**A**s the name implies, Transmission Control Protocol/Internet Protocol stands for two separate protocols.

While they are occasionally referred to separately (especially IP), they're more often grouped together and actually consist of more than a half-dozen protocols.

IP is a Layer 3/Network Layer protocol on the Open Systems Interconnect model, and its function is to connect networks, creating an "internet," which is a network composed of more than one subnetwork.

TCP, a Layer 4/Transport Layer protocol, runs on top of IP and provides reliable, end-to-end communications between two different machines on the internet.

One of the major differences between the two is that TCP is "reliable" and IP is "unreliable" — which doesn't mean that it fails often but rather that it doesn't guarantee that a packet of data gets delivered. That's TCP's job.

In addition to these two protocols, the term "TCP/IP" generally also refers to three Layer 7 applications programs, including the following:

- FTP, or file transfer protocol, which allows users to exchange files between two machines on a TCP/IP network.

- Telnet, or the ability to log on remotely to another machine on a TCP/IP network (sometimes also known as "virtual terminal" capability).



- SMTP, or Simple Mail Transfer Protocol, which provides very basic electronic mail links between two machines on a TCP/IP network.

Another application commonly associated with TCP/IP is NFS, or network file system. NFS is a method of storing files that allows heterogeneous computers to read them. NFS was originally designed for Unix systems but is now available for almost every type of hardware and operating system.

SNMP, or Simple Network Management Protocol, is another protocol associated with TCP/IP. Basically, SNMP is a standard way for devices to report and collect data about problems on the network.

SHARON FISHER

## TCP/IP

CONTINUED FROM PAGE 97

unload it when they need the memory on their PCs, rather, they have to reboot the machine.

When people choose TCP/IP, they can't always expect a warm and fuzzy user interface. The software will allow users to transfer files, but it may use an interface that's more like Unix than DOS.

Vendors are working to improve interfaces, however. Locus Computing Corp.'s PC Interface, for instance, allowed users at Franklin Mortgage Capital Corp. in

McLean, Va., to link PCs with Unix workstations without learning how to use Unix or a new interface, says Daniel Grader, senior vice president of financial systems at the company. "PC NFS was available, but what I saw didn't look DOS-like to the DOS user," he says.

In an effort to create a friendlier user interface, many TCP/IP software vendors are building in Microsoft Corp. Windows support, with varying degrees of success. In tests run by a technical staff member at a major research organization, all of the applications resulted in "unsuspected application exceptions" under Windows. The products analyzed included Netmanage's Chameleon, FTP Software's PC/TCP, Frontier's Super-TCP, Distinct Corp.'s Distinct TCP and a public domain package.

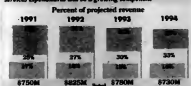
While some TCP/IP vendors are working to create true Windows applications, others are merely allowing DOS applications to run in a window.

FTP Software has confirmed that it will provide Windows support by the end of the year, while Frontier, Netmanage, Wellmang, Novell (through its LAN Workplace for DOS product) and Bessie & Whiteside all say they support Windows now. Sun's PC NFS supports TCP/IP applications under Windows only as a full-screen DOS application.

But just because you get Windows support doesn't mean you've got it all. To fulfill users' needs for both NFS and Windows, SSSD's Sessow had to purchase two TCP/IP software packages. Some users run PC NFS, with Telnet in a full window under DOS, and people who need Win-

### Service expenditure

Total TCP/IP spending is expected to show down after 1992, but services expenditures will be a growing component



Hardware includes hardware products, dedicated communications resources, switches, routers, bridges and dedicated test gear and diagnostic equipment. Software includes the cost of TCP/IP software for all types of devices. Services includes network administration services and central network management. This section will continue to include both internal and external network maintenance services and other interface maintenance services.

CP Chart: Michael Higgins

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## Product highlights

**I**n the increasingly crowded TCP/IP software marketplace, personal computer software vendors are being forced to differentiate their products. Here is a sampling of where some vendors claim to stand out:

- Frontier Technologies claims the most comprehensive Windows support and the ability to support simultaneous TCP/IP and Open Systems Interconnect stacks for future migration.
- Bessie & Whiteside's implementation is said to be one of the smallest and fastest.
- DEC's Pathworks products promise to bring the full set of DEC's networking capabilities to PCs through industry and de facto standards.
- FTP Software offers more applications that run on top of TCP/IP than other vendors, such as a number of Unix-based applications and the ability to act as both a server and a client.
- IBM's TCP/IP for DOS claims broad and thorough function, competitive price/performance ratio, easy installation and complete documentation.
- Netmanage says it is the only vendor to offer a Windows dynamic data link library, which lets users have up to 32 concurrent TCP/IP sessions.
- Novell's TCP/IP protocol stack under Netware 3.11 supports standard Unix application interfaces such as Berkeley sockets and AT&T's Streams. Its LAN Workplace for DOS implementation supports Netware's IPX transport protocols over TCP/IP and offers Windows support.
- Sun claims best performance and documentation.
- Walker, Richer & Quinn claims many types of terminal emulation.
- Wellmang's claim to fame is its wide range of implementations — for OS/2, Apple Computer, Inc.'s Macintosh, minicomputers, mainframes and DOS — making it easier to use for people who switch between machines.



Office Power application because the minicomputer supports only some TCP/IP implementations, says Richard Perlman, information systems manager.

Similarly, TCP/IP purchasers need to make sure their vendor's SMTP implementation works with the E-mail package already in use on the PC network.

"Everybody is using SMTP," but they may have to be going through CC-Mail or Quickmail or Lotus Notes," Lynch says. "The user will care about the interface between the local mail system

and the SMTP system."

Even if two machines support TCP/IP, there is enough variation in different vendors' protocol stacks that some implementations are not compatible with others.

At Franklin Mortgage, the Sequent Unix minicomputer that Seguser is now using for a data base machine doesn't support PC Interface, meaning that the PC users need to continue getting their file transfer from the organization's installed base of Prime minicomputers.

Compatibility is also impor-

tant at the driver level. Drivers act as the go-between for the network adapter and the PC communications software. PC network interface cards typically support drivers written specifically for them as well as up to three standard drivers, including 3Com Corp.'s NDIS, Novell's ODI and the public domain packet driver specification.

The driver used in the TCP/IP implementation must support the network adapter as well as be compatible with the other communications applications in use.

In other words, you can't have a TCP/IP implementation that supports the NDIS driver and a network operating system that uses an ODI driver.

#### Who supports what?

Frontier and Beane & White-side support NDIS and the public domain specification; FTF and Wolfling support NDIS, ODI and the public domain specification; Sun, Netnagame and Walker, Richer & Quinn, Inc. support NDIS; and Novell's Network 3.11 and LAN Workplace for DOS support ODI.

On top of all the effort that goes into installing TCP/IP, people still talk about the eventual dominance of Open Systems Interconnect and the importance of planning an eventual transition.

Some people forecast the waning of TCP/IP's popularity in the next few years. However, TCP/IP has gained a strong foothold in corporations today. TCP/IP is what corporations use now, and as anybody who's tried to pry 640K 8088-based PCs out of corporate users' hands knows, inertia is a powerful force. ■

## Parts for assembly

To connect a PC network to an enterprise network using TCP/IP, several pieces are required:

- Hardware to link the PC network to the enterprise network, most likely a router.
- TCP/IP "client" software, either on the individual PCs or on the server to be shared by the PCs. This software may be an application that provides just TCP/IP support, or it may incorporate support as part of a larger product, such as Novell's TCP/IP support in Netware 3.11.
- TCP/IP "server" software on the Unix workstations, minicomputers or mainframes.
- Drivers that allow the PC TCP/IP software to communicate with the network adapter cards in the PCs.
- Network management.

Your current PC network plays a large role in deciding the type of router and TCP/IP software you choose. The router needs to support whatever type network the PC is on, as well as the media linking the LAN to the enterprise network, be it Ethernet, Fiber Distributed Data Interface or a wide-area network.

Routers also need to support all of the protocols used in the organization. Appropriate routers are most plentiful for Ethernet-based environments but are starting to appear increasingly for Token Ring.

The TCP/IP software market for PCs has seen a similar transition from Ethernet to Token Ring. Older packages were developed just for Ethernet, but software is now available for Token Ring and Arcnet. The TCP/IP software also has to interoperate with the network operating system, preferably the one with which PC users are accustomed.

Available products must often support one or more of the major network operating systems, including Novell's Netware, Microsoft's LAN Manager and Banyan Systems, Inc.'s Vines.

As for server software, you're pretty much bound by the PC network operating system, says Daniel Grailer, senior vice president of financial systems at Franklin Mortgage Capital Corp. in McLean, Va. Organizations need to look for TCP/IP software for the Unix workstation, minicomputer or mainframe that is compatible with that network operating system.

The host won't take long if your network operating system supports TCP/IP, as Netware 3.11 and LAN Manager do. "If you're on LAN Manager, the obvious solution is to get LAN Manager (LM/X) for the Unix machine. If Netware, the obvious solution is to get Netware Netware," Grailer says.

If the network operating system doesn't support a TCP/IP protocol stack, users may have to run two user interfaces or "shells" — one for communicating with other PCs and one for communicating with other systems on the TCP/IP network.

This gives an organization more programs to choose from and is simpler than trying to support TCP/IP on PC networks linked in one product. However, it adds a burden on users, who need to reboot to switch shells, and it requires extra memory.

Depending on the organization's policies, linking to the enterprise network may also require some form of network management. If the network is primarily made up of Ethernet and Unix workstations or minicomputers, this will most likely take the form of the Simple Network Management Protocol, an industry standard for network management over TCP/IP networks.

If the network is primarily IBM mainframe-based, support for IBM's Netview network management protocols may be required.

SHARON FISHER

## Making the transition from TCP/IP to OSI

BY MARSHALL ROSE

Ever since Open Systems Interconnect (OSI) was introduced in 1979, people have discussed how to move to that set of protocols or coexist with it. This is true even for companies running TCP/IP, the de facto solution for open systems networking.

It's questionable when — and if — OSI will achieve dominance over TCP/IP, but it's still a good idea to plan for coexistence or an eventual transition.

Not surprisingly, several different approaches have been developed to aid either a full transition or a move to coexistence (see chart). With OSI. Although there is no commonly agreed-on set of metrics to compare these strategies, here are four fairly intuitive ones:

- Performance. Once the strategy is implemented, how well does the system perform in terms of both throughput and latency? How are other applications on the network affected?
- Flexibility. Is a special-purpose solution (for instance, a dedicated gateway) required for each application, or can one general solution serve the needs of a wide range of applications?
- Transparency. Is it possible for end users to be unaware that the coexistence/transition strategy is "in the loop"?
- Maintainability. How manageable is the strategy? Does it impose extra administrative burdens on the network operator?

Transparency and maintainability, as defined above, often come into conflict. Some user communities may choose a less transparent strategy so that network administrators do less involved. On the other hand, a strategy that offers seamless integration for users might pose significant problems for administrators. Although you can compare

Rose is president of Mountain View, Calif.-based Down South Computing, which specializes in TCP/IP inter-

these characteristics objectively — given a sufficiently rigorous set of benchmarking definitions — choosing among the alternatives is really a subjective process. Technical solutions to the transition and coexistence problem do not exist in a vacuum; they make sense only in the con-

### OSI transition strategies

#### Direct-stack approach

Put elements from both protocol suites in server hosts, and run both protocols in all routers. The effect is to create virtual routers over a single physical one (i.e., packets from both protocol suites can be switched over the same media). When it's decided which suite to use, this requires either a full host or some kind of directory service. This is a good approach when you have control over all the routers and the router vendor supports both protocols.

#### Evaluation

Performance: No degradation

Maintainability: Good

Transparency: Potentially high

Maintainability: All routers must run both protocols to avoid connectivity problems. Management is twice as hard as managing a network with one protocol suite.

#### Applications gateway approach

Deploy special servers that translate between similar services in the two suites (e.g., a converter between E-mail protocols 3.60 and SMTP). Depending on the similarity of service, the quality of information may be reduced (e.g., image cannot be transmitted over text-only networks). This is a good approach when you want to minimize changes to the installed base of hosts and routers.

#### Evaluation

Performance: Usually poor but OK for small and perhaps file transfer

Maintainability: Near each gateway is a special-purpose software host

Transparency: Variable

Maintainability: Requires changes to a very small subset of the installed base

#### Transport bridge approach

Deploy special routers that convert between the transport services in each suite. You then run applications from one suite in both protocol environments (i.e., run OSI applications over TCP/IP networks). When a pure OSI system wants to talk to an OSI/TCP/IP system, it goes through the transport bridge. This is a good approach when you want over time to start using OSI applications. The drawback is that two hosts have to use a transport bridge (because they don't speak the same lower-layer protocols), the bridge can be a single point of failure.

#### Evaluation

Performance: Fair

Maintainability: High (application-independent)

Transparency: Total

Maintainability: TCP/IP-based hosts must run new applications protocols

#### Network tunnel approach

Encapsulate network protocol from one suite in the other suite (e.g., carry CSNP packets as IP traffic). A good approach when you can get all the routers to speak OSI.

#### Evaluation

Performance: No degradation

Maintainability: High (application-independent)

Transparency: Total

Maintainability: TCP-based hosts must run OSI stack

Source: The Open Book, Marshall T. Rose, Prentice-Hall, 1989

CW Chart: Janet Gossens



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## Costs are declining for TCP/IP on PC LANs

BY ERIC SMALLEY



ment.

TCP/IP software for PCs has dropped dramatically in price. There has been little change in single-node license prices,

Smalley is a Boston-based free-lance writer specializing in network technology.

which go for about \$400; however, for a 20-node license, prices have dropped from \$350 per node to \$175 today.

TCP/IP software vendors have reduced the amount of memory consumed by the software, so DOS machines do not require a memory boost. In some cases, a TCP/IP protocol stack, Network File System software and a network driver can occupy as little as 50K bytes of memory.

With the advent of the Network Device Interface Specification (NDIS), even more money is saved. Vendors have been selling network adapter cards that support multiple network drivers for years, allowing multiple network protocols to

run on a PC with a single card. But the advent of standards for network adapter cards made multiple protocol support cost-effective because most networking vendors now support the standards.

End-user training and support for TCP/IP has also loomed as a significant cost issue. The surging popularity of Microsoft Corp.'s Windows 3.0 has started to change all that, as many TCP/IP vendors have begun supporting the graphical user interface. Instead of learning TCP/IP commands, users can click on icons or buttons and scroll through menus to use TCP/IP.

This new interface may improve the

ease-of-use factor, but it still requires end users to be versed in two distinct networking schemes: the PC network operating system and TCP/IP. There's really no way to get around the increased need for training and support, even to the point of allocating additional support staff to the job.

One way to incur only a negligible expense is to install a TCP/IP gateway on the server for access to the host computer or rather than putting software on each PC. Not only do you save on the number of software licenses, but you bring TCP/IP to PC LANs with the least disruption. The PC LAN is connected with the corporate network, but individual users don't have to operate in that new environment.

On the downside, gateways have some limitations. For one thing, the gateway translation process can slow the system. Gateways also limit the reach of TCP/IP network management systems, which are based on the Simple Network Management Protocol (SNMP). The SNMP management system cannot pick up information from individual machines beyond the gateway. \*

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### Price tags

The following scenarios outline the estimated costs of putting TCP/IP on a LAN:

1) Adding TCP/IP to a 100-node LAN with no network operating system: A TCP/IP license costs \$12,500, and an NFS license costs \$3,500 for 100 PCs. The support staff needs to add personnel, but this can be a \$30,000 entry-level position, since there is no network operating system to support. **TOTAL COST: \$46,000**

2) Combining TCP/IP and a network operating system on a 100-node LAN: An investment of \$12,500 is again required for the TCP/IP license, but NFS is not. The support staff will need to hire someone versed in both the network operating system and TCP/IP, requiring a compensation package of about \$50,000. **TOTAL COST: \$62,500**

3) Using a gateway to link the LAN into the TCP/IP network: If end users only need terminal access to TCP/IP hosts, a TCP/IP gateway can be installed either on the network server or on a dedicated server. Dedicated server gateways are priced from \$4,500 to \$6,000. Novell's gateway, the \$4,995 NFS Network Loadable Module, requires an upgrade to Network Version 3.11, which costs \$3,535. Network and Communications Management, Inc. in McLean, Va., offers TCP Server for Network, formerly sold by Rascal Interiors. This gateway costs \$5,995 for 60 nodes. Banyan Systems, Inc. offers a nondedicated server TCP/IP gateway for its networks. It costs \$1,995 for any number of users. **TOTAL COST: \$1,995 to \$13,785.**

ERIC SMALLEY

# The trials, tribulations and triumphs of TCP/IP

*Despite compatibility snags and implementation glitches, users say TCP/IP is worth it*

**School overcomes implementation bugs, secures robust network**

Lower costs and easier management are the reasons the University of Washington in Seattle chose TCP/IP as its backbone network three years ago to connect a diverse array of hardware equipment.

"You name it, we've got it," says Terry Gray, director of networks and distributed computing. "We have about 5,000 PCs, 5,000 Macs, 500 X terminals, quite a few hundred Unix workstations and large IBM, Unisys and Digital machines."

Supporting Digital Equipment Corp.'s Decnet, Novell, Inc.'s IPX, Apple Computer, Inc.'s Appletalk and TCP/IP was getting to be both a budget and a management burden.

"Heterogeneity always costs more than you think it will," Gray says. Multiple protocol networks result in high support costs, and each protocol has its own quirks and bugs.

Not that the TCP/IP implementation was a run through the grass, but Gray's staff was willing to learn the ins and outs of TCP/IP and deal with occasional incompatibilities in order to eliminate multiple protocol headaches.

"We figured we would rather do one thing well than try to support many protocols poorly," Gray says. The reward was a single-protocol backbone that is more reliable and robust than the university's old multiprotocol network.

Most of the compatibility issues during the installation of TCP/IP revolved around the university's DEC machines.

"If the vendor supports TCP/IP as part of the protocol stack, there are no operating problems," Gray says. Unix machines are among those providing direct support in this way. Machines that support a proprietary protocol can link to TCP/IP if the vendor or a third-party vendor encapsulates the protocol into IP.

For example, to use the DEC VMS machines, which run on Decnet, the university had to install TGV, Inc.'s Multinet software, which encapsulates the Decnet packet within IP.

Earlier this year, DEC introduced a TCP/IP version of its Pathworks connectivity package, providing its own solution for connecting Decnet machines over TCP/IP.

The only remaining drawback to running DEC machines on TCP/IP is that DEC's LAT protocol for terminal emulation isn't fully implemented. LAT is designed for bridge-based networks but not router-based ones.

The upshot is that users running on VMS hosts cannot connect directly to other VMS hosts across campus. "Now I have to log into my machine [using LAT] and use another protocol, TCP/IP, to connect to theirs," says Derek Haining, a systems programmer at the university.

"There are still issues to solve with respect to proprietary systems," Gray says. "But some of the more enlightened manufacturers understand how important it is to be interoperable with the rest of the world and are improving support for TCP/IP."

As for his future plans, Gray says, "Our grandchildren will still be using TCP/IP. I don't see a migration to OSI [happening] in my lifetime."

■ ■ ■

**Support team's discovery: Beware of varying vendor versions**

The course of interoperability never runs smoothly. That's what Tom Moore learned when he tried to link several Appletalk local-area networks at the Red-

stone Arsenal in Huntsville, Ala., to the site's extensive TCP/IP network.

"Macs are beautiful machines, and we love them here, but we encountered incompatibilities between [Apple Computer, Inc.'s] implementation of TCP/IP and others we've been running for several years," says Moore, director of installation support for information systems command. Because of the incompatibilities, it took several months to bring Redstone's Appletalk networks into the TCP/IP fold.

The problem was evident as soon as

Macintosh users tried and failed to communicate through the backbone's routers with machines on other LANs.

After consulting with Apple and router manufacturer Proteon Corp., Moore discovered that the version of TCP/IP in Appletalk 3.0 was different from that supported in Appletalk 2.0, which Proteon supported.

"Apple didn't choose to abide by the rules," Moore says. "All our other hardware was compatible with the Proteon routers." To resolve the issue, Proteon updated its routers to support Appletalk 3.0.

Bridging the Appletalk LANs on board was the last step in the TCP/IP implementation at Redstone. During the course of

*Continued on page 105*

# THINK OF IT AS A FREE MAINFRAME.

The stories on these two pages were written by Lucie Jarman, a free-lance writer and editor based in Salem, Mass.

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## Trials

CONTINUED FROM PAGE 103

several years, Redstone's three-tiered computer architecture has been integrated into a fully interoperable TCP/IP backbone network, Moore says.

"Initially," he says, "we had the departmental-level minicomputers linked," including Unisys Corp. 5000s, IBM RISC System/6000s and minicomputers from Digital Equipment Corp., Hewlett-Packard Co. and others. Linking the minicomputers to Ethernet was relatively easy, Moore says, because most of them ran Unix.

Next, Moore linked the Arsenal's mainframes to the minicomputers via TCP/IP. This included machines from Amdahl Corp., IBM and National Advanced Systems running IBM's MVS, as well as one Amdahl machine running UTS, a Unix operating system.

The mainframes were linked to the TCP/IP Ethernet backbone using Fibronics Corp.'s K-Net 2000 buses and Intel-based Uniphase 9700 front-end processors, Moore says.

Personal computers, Macintoshes and workstations were the last to interface with TCP/IP. Most of the PCs were linked to the TCP/IP backbone via 3Com Corp. or Novell, Inc. LANs, whose servers connect directly to TCP/IP. The AppleLink networks were linked using Gatorboxes from Cayman Systems, Inc.

Since the Macintosh problem was resolved, the TCP/IP network has been working fine, Moore says.

■ ■ ■

Sometimes, the secret to success is two protocols: TCP/IP and NFS

When Yankee Atomic Electric Co. in Boston, Mass., set out to link its multiple-platform computers three years ago, it had two choices: TCP/IP or DEC's Personal Computer Systems Architecture (PCSA).

The winner? TCP/IP.

"We wanted to use something that would move us into a Unix environment," says Lew Townson, Yankee's programmer and network administrator.

The equipment that needed to be linked included four DEC machines, a Cyber 960 from Control Data Corp., 100 PCs and an Apple Computer, Inc. AppleLink network.

To determine specific interoperability needs, Yankee set up a task force, identifying such requirements as virtual disk capabilities, high-speed file transfer and virtual printing.

The task force considered PCSA — DEC's strategy to tie VMS and Ultrix machines to DOS, OS/2 and Apple Macintosh equipment. While the AppleLink could provide connectivity via Decnet, Yankee rejected it for two reasons.

For one, it would work only with DEC's proprietary Ethernet board, which cost at \$500 — three times more than the \$150 Western Digital, Inc. boards that Yankee was using. Purchasing DEC's board for each of Yankee's 100 PCs would have been expensive. (Note: Today's implementation of PCSA DOS client software — Pathworks for DOS — is compatible with industry-standard boards.)

More significantly, PCSA was unable to interoperate with the Cyber machine, which Yankee used for number crunch-

ing. It was also incompatible with Yankee's Intergraph Corp. computer-aided design server. The current version of Pathworks still does not link easily with either of those machines.

When task force members considered TCP/IP, they realized it could not handle virtual disk and printing, so they settled on a dual-protocol solution: TCP/IP and Network File System (NFS).

"We knew TCP/IP would do file transfers for us and provide connectivity," says Barry White, senior systems analyst at Yankee. Sun Microsystems, Inc.'s NFS could support virtual disk and printing capabilities.

There were some hurdles to jump along the way, however. Yankee had a hard time finding server software for the

VAX/VMS system that could handle the heavy volume of traffic between the VAX server and the many PCs around the building. After trying many different products, Yankee chose TGV, Inc.'s Multinet NFS server software to run on the VAX 4200.

The PCs are tied into the Vaxcluster via Sun Microsystems, Inc.'s PC NFS client software. Townson says Multinet NFS does an excellent job of serving the PCs. To link in the Cyber machine and AppleLink network, Yankee had to purchase some interface products. For the Cyber, it chose CDC's own TCP/IP interface and a separate product for NFS.

To tie the AppleLink network into the backbone, it purchased Cayman Systems' Gatorbox, which encapsulates Macintosh

protocols in TCP/IP.

"Once you install the software products and get a connection, TCP/IP works fairly well," Townson says. About 50 printers on the VAX system are available to PC users. Using the client/server software, "anyone with a PC can do high-speed file transfers, virtual printing and virtual disks for storing files."

Since its NFS and TCP/IP network was installed, Yankee's operations have grown. But this hasn't caused problems on the network. When machines have become outdated, Yankee has incorporated new ones.

Today, aside from one small PC local-area network, all of Yankee's computers are part of the TCP/IP and NFS backbone, including 350 PCs. ■

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## TCP/IP application suites for PCs

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The companies included in this chart responded to a recent survey conducted by *Computerworld*. When a vendor is unable to provide specific information about its product, the abbreviation NP (not provided) is used. When a question does not apply to a vendor's product, the abbreviation NA (not applicable) is used. Contact vendor for further product information.

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## Banks assess IS' worth

*Banks have rarely had to tie IS investment to business impact, but that may be changing as economic woes force them to spend smart*

Second in a series on assessing the value of information technology in vertical industries.

BY ALAN J. RYAN

**T**he banking industry may have a reputation for stodginess and conservatism, but it has spent, and spent heavily, on information systems — an estimated \$12 billion this year alone — without requiring much documentation of bottom-line impact.

Not that making such a connection would be an easy task. After all, IS has become so thoroughly ingrained in banking that the industry would be at a virtual standstill without it. Trying to assess the value of IS on the bottom line in banking would be like trying to measure the value of an accounting department or a personnel department, bank IS executives say.

IS is simply "integrated into the business fabric. You don't measure too many business fabrics," says Fred L. Ciesewski, senior vice president and director of MIS at Bank South NA in Atlanta, which has a 1991 IS budget of roughly \$10 million. "IS is integrated into the overall business plan," Ciesewski says, "so why would you want to differentiate it?"

David B. D'Brainstein, vice president of the Commercial Operations & Support Department at Security Pacific Automation Corp. in Glendora, Calif., concurs. D'Brainstein, who has worked in banking IS since the 1960s, says that when he started, "there

was no business case needed for IS projects. Someone just said, 'Do it, and you'd do it.'"

But while those executives haven't yet been mandated to provide a direct link between systems implementations and business profitability, they are being asked to think about IS economics. With banks facing a faltering economy and bad debt, IS is being asked to look at the areas in which it can make dollar measurements: applications development costs, departmental budgets, chargeback fees, outsourcing expenditures, data center costs, project payback periods and personnel.

To discuss how the banking industry goes about assessing IS' worth, *Computerworld* brought together Ciesewski, D'Brainstein and two other IS executives — Peter D. Conley, IS manager at First Alabama Bank in Montgomery, Ala., and Richard A. Spradling, vice president of systems and technology at Farm Credit Bank of St. Louis in Missouri — at the American Bankers Association National Operations and Automation Conference in Orlando, Fla.

### Focus on costs

With bank profits flat or declining in much of the industry, more attention is being paid to operating expenses. "The interest on profitability is going to have to be throughout the enterprise and not just at the very top," says Robert Mull, director of the Center for Financial Services Research at Arthur D. Little, Inc. in Cambridge, Mass.

D'Brainstein says his department is very business-case-motivated today. For IS projects, "there is much more of a focus on hard dollar justification than ever before. If you can't improve your revenue stream coming in or cut staff in a very short time going out, then your project will be automatically deferred," he explains.

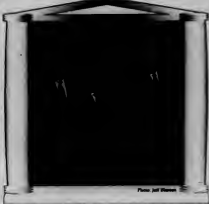
For instance, applications development gets a hard look these days. "The idea that if we haven't built it ourselves it is no good is gone. That's history," D'Brainstein says.

To build a business case these days, IS needs to have its act together. "You have to have your project life cycle laid out, and you have to have your return on assets and equity and investments laid out in detail," D'Brainstein says. Doing your homework up front means fewer chances of having your

proposals rejected, he adds.

Spradling says IS should "build its case for the project based upon capacity planning and the bank's vision of the future."

He adds that projects that are likely to impact external bank customers are more likely to receive funding than those designed to make life easier for internal customers. If finances get tight, projects for internal bank



(Left to right) Ciesewski, D'Brainstein, Spradling and Conley agree that part of the value of IS is in working smart

### Credit where credit is due

How banks assess the business value of IS

- Determine impact of IS on other bank departments; this can range from a subjective evaluation to a chargeback review.

- Examine projected payback periods and gains of IS projects.

- Conduct postimplementation reviews to see whether promises of IS projects meet expectations.

- Analyze report cards from user departments.

- Examine IS costs, including evaluating outsourcing.

CV Chart: Mark Haines

users can be deferred to help save money, while projects that impact the outside customers will continue to receive funding.

### Part of a team

These IS managers say there are some obvious ways to place a dollar figure on technology in a bank. The most common would be to take an inventory of hardware and software and to track the dollars brought in through chargeback fees they receive from other bank areas using their services.

However, the reasonable participants say that if they were asked to try to measure the intrinsic value IS brings to banking, they would look to their relationships with other bank departments rather than just looking at dollars. Put simply, they are working for the user departments and can measure the worth of their systems through their importance to those departments.

For instance, Conley at \$6.3 billion First

Continued on page 116

## Nightmare Scenario #1

# THE UNDETECTED TIME BOMB.

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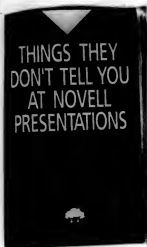
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Continued from page 119

Alabama says his department, which has a \$10 million budget for 1991, is evaluated through a quarterly report card rating IS service levels to the bank's business areas. "IS performance is based on performance with the business areas," he says.

In fact, the bonds between business function and IS are often so strong that in many of the banks, IS projects are approved by top management by the user departments themselves, either alone or in conjunction with IS.

At Farm Credit Bank, Springfield, IS expenditures are considered to be one component of a project that might open two or more business units or the entire company. "Our business plan calls for increases in market share and increases in productivity," he explains.

Therefore, the IS technical-level plans must be tied in with the business strategies. Spradling says his bank is considering redesigning business processes to help bring about a doubling of productivity in its loan organization. He justified the project by estimating that it would increase productivity 100% without increasing head count. The package as a whole is justified — not just the IS portion.

In fact, Spradling says, IS has an increasingly difficult time putting forth projects on its own that will impact the business. "What is now required is a joint effort [by IS and business users]

of reviewing the process, changing the way business is conducted and applying technology to make it more effective."

#### In-house vs. outsourcing

Another way IS economies can be studied, the roundtable participants say, is based on how the organization is run within the bank — such as whether the IS department is staffed with in-house employees or run by an outsourcer.

Allocating money to an out-

**THE IDEA**  
THAT if we haven't built [an application] ourselves it is no good is gone. That's history."

DAVID B. D'BRAMSTEIN  
SECURITY PACIFIC

sourcing is nothing new to the banking industry, which frequently looks to outside parties to handle everything from mail-room operations to credit card systems to third-party check processing.

In fact, in such a heavily government-regulated environment, it is easier to let someone else deal with the technology and the ever-changing regulations, those who outsource say. Through outsourcing, a bank can easily review its IS spending by comparing outsourcing costs with the cost of running the data center without outside help.

At the \$5.4 billion (in assets) Bank South, Cincinnati, the entire IS operation has been outsourced, which has helped IS save money. It also means that Czerwinski and his staff do not have to spend all kinds of time justifying individual IS expenditures. Instead, he says, "You can concentrate on the business issues."

The outsourcing firm

actually makes the pricing and tabulation of costs of new kinds of IS services easier, he adds.

The \$4 billion (in assets) Farm Credit Bank, which has an annual IS budget of \$5 million and 15 employees, has outsourced its applications development, telecommunications and data center operations, with Electronic Data Systems Corp. as the primary vendor. Because of that, Spradling explains, the traditional, simplified costs associated with moving to different computing platforms become variable and hence more easily curbed.

What about judging the value of basic expenses, such as maintenance of critical systems that require a certain number of bodies to keep them running smoothly? When it comes to maintenance-type items, Spradling says, the investment is directly related with the user at the beginning of the year, talk through the maintenance-type items on existing projects. He basically says, "How much do you want to continue to invest in the applications that we've worked with you on in the past? Low investment is going to mean more errors, more quality problems, slower response." We negotiate service standards with the customer up front.

#### Looking out results

Another way to measure the value of IS projects and spending is by comparing the actual results with project results and payback periods. D'Brumstein says that in an age of increasing bank competitiveness, payback horizons are shrinking. "If you can't get payback from a system in two years or less, then it is going to be deferred."

As long as the department can justify and make a valid case for the expenditures — and show that payback periods for the expenses are reasonable — it usually gets the funding it requires, D'Brumstein says.

Security Pacific Corp. has assets of \$43 billion, and Security Pacific Automation, the bank's automation company, has a \$438 million budget and an IS staff of 5,600. For Security Pacific Automation, the test of IS value and how it is measured is especially important because the bank is being acquired, subject to shareholder and regulatory approval, by BankAmerica Corp., which will merge the IS departments (CW, Aug. 19).

For now, D'Brumstein says, it's pretty much business as usual for his department.

#### No set ways

Even with all these ways to assess internal IS costs, the roundtable participants say, the fact remains that there are still no set ways to the way of the IS value measurements they employ to

#### Go figure

IS value is hard to determine for banks because technology is such an integral part of what they do. That pressure is building for some kind of measurement.



"IS is integrated into the overall business plan, so why would you want to differentiate it?"

Fred L. Czerwinski  
Bank South NA



"If you can't get payback from a system in two years or less, then it is going to be deferred."

David B. D'Brumstein  
Security Pacific Automation Corp.



"IS performance is based on performance with the business areas."

Peter D. Conley  
First Alabama Bank



IS should "build its case for the project based upon capacity planning and the bank's vision of the future."

Richard A. Spradling  
Farm Credit Bank of St. Louis

CW Photo: Mike Haines

#### Soft justification

How bank IS executives convince management of need for new IS investment

- Service quality: "We can't respond to customer needs quickly without it."
- Competitiveness: "Other banks are providing this service, and we should, too."
- Comparing cost/quality trade-offs: "If we spend X, we can achieve this level of quality improvement. If we spend Y, we'll save a little money, but quality levels will be lower."
- User department involvement: "The loan origination process will save a 100% efficiency improvement with this proposed system."

CW Photo: Jonell Gorman

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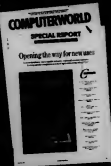
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# COMPUTER INDUSTRY

## NATIONAL BRIEFS

### Leaving Ameritech

► Slumping down for action, Chicago-based telecommunications player Ameritech late last month launched a voluntary retirement program aimed at cutting some 3,000 employees from its management-level rolls. Effects of the streamlining, which would thin Ameritech's management ranks by about 12.6%, should make a major showing on the bottom line beginning in the first quarter of 1992, the company said.

### Index founder leaves merged firm

► Intersolv, Inc. last week announced the resignation of Richard A. Carpenter from his posts as vice chairman and chief of strategy and product architecture. The Rockville, Md.-based software house was formed in March when computer-aided software engineering products vendor Index Technology Corp. and Sage Software, Inc. merged; Carpenter, who founded Index, was chief executive officer of that firm at the time. He will retain his seat on Intersolv's board.

### Aries rising

► Software 2000, Inc., a business software provider for IBM's Application System/400 computer, has announced a merger with Aries Software to provide Aries' Epic process manufacturing system for the AS/400. Hyannis, Mass.-based Software 2000 did not disclose the terms of the merger with privately held Aries, based in Louisville, Ky.

### 'No mystery' tour

► Seagate Technology, Inc. founder/head Allen Shugart, newly manning the firm's presidency in the wake of his predecessor's sudden departure (CW, Sept. 30), is about to set off on a world tour of Seagate plants to make clear to employees that their company is on firm footing. His message, according to a company spokesman, will include three key points: Seagate plans no layoffs. It plans no major changes. And it doesn't plan to search for a president. "Shugart is it," the spokesman said. That phrase also answers the question, "Who is the newest director of San Jose-based digital audio tape maker R-Byte, Inc.?"

## FTC turns up heat on technology firms

### BY MITCH BETTS CW STAFF

WASHINGTON, D.C. — For several decades, antitrust lawyers at the U.S. Department of Justice have played a role in shaping the computer industry. Witness, for instance, the 1956 Consent Decree with IBM that allowed the computer services industry to flourish and the 1962 Consent Decree with AT&T that let it enter the computer industry and buy NCR Corp.

Now a reinvigorated Federal Trade Commission (FTC), which shares jurisdiction over most antitrust matters, is getting into the act.

FTC investigations of Microsoft Corp. and Intel Corp. have again put the industry on notice that it is not immune to antitrust enforcement.

**Price of 'maturity'**  
The industry may not appreciate the compliment, but the government attention is a sign of maturity. "When the industry was young and small, except for the superstar IBM—you could do what you pleased and nobody minded," said Esther Roditi Schachter, a computer lawyer in New York.

But as the industry matures and it's clear to the government that this is an important sector of the economy, even agencies run by Republicans begin to pay attention," she said.

Furthermore, the industry is beginning to look like a sector

ripe for antitrust abuses, with increasingly aggressive players, financial problems, stagnant markets and commodity products. "If you're in a strong, ebullient market, you don't need to violate

Not really. "There is no targeting of any one industry. We bring our cases where we find them," FTC spokeswoman Bonnie Jansen said. FTC investigations are usually triggered by

"An investigation of one company in an industry makes it more likely that the agency will receive complaints about other companies and that the staff will uncover problems at other companies," said Stephen Collins, an antitrust expert at Wayne State University in Detroit.

For example, the first company asked about a possible violation may protest that "everybody's doing it," at which point the investigator begins taking down more company names.

**What is the FTC looking for?**  
That is hard to tell because the FTC will neither confirm nor deny that it has any investigation under way, let alone discuss its reasoning.

However, an FTC letter released by Microsoft said the probe was triggered by complaints that Microsoft has monopolized or attempted to monopolize the market for personal computer software, including operating systems and environments (CW, April 15). In the latter case, the FTC is apparently looking into the company's powerful role as the sole maker of the popular 80386 microprocessor (CW, July 8).

The key points in antitrust cases are how to define the relevant market and whether the actions were illegal restraints of trade or merely aggressive business practices. "There's a awful lot of robust competition that can occur without any antitrust problems at all. The courts are

Continued on page 118

### Who does what

How the U.S. Department of Justice and the Federal Trade Commission divide their authority over antitrust matters in the computer industry

DOJ: Criminal, civil, government

- Criminal price-fixing cases.
- Common carriers, such as AT&T.
- Research consortia, such as Microelectronics & Computer Technology Corp., Open Software Foundation and Bellcore.



FTC: Monopoly and consumer rights

Under the Hart-Scott-Rodino Act of 1976, both agencies are formally notified of proposed mergers. They have a formal clearance process to determine which agency will do the full review. For example, the merger of Borland and Ashton-Tate is being reviewed by the Justice Department.

Minor deals such as the 1990 merger of Terasoft Corp. and Sharebase Corp. get an abbreviated review.

Other antitrust issues

- Both agencies share jurisdiction, with an informal process to determine which one will handle a particular case.
- IBM consent decree (1956) and outsourcing.
- Microsoft.
- Intel.

CW Chart: Michael Spitzer

the antitrust laws. Everyone can do well," said David R. Kamerschen, an economics professor at the University of Georgia.

For industry players unfamiliar with federal antitrust enforcement, here are the answers to some likely questions:

**Has the FTC targeted the computer industry?**

complaints from competitors, consumers or members of Congress, as well as by press reports or activities that arouse the interest of the FTC staff.

**Will the investigations spread?**

Antitrust investigations often do spread to other companies in an industry, experts said.

## Users debate effects of software firm mergers

### BY JOHANNA AMBROSIO CW STAFF

The current bout of software industry mergers has sparked a debate over whether users ultimately gain or lose when vendors combine.

On the negative side, observers said, customers will have fewer choices and will likely see higher prices for software. The good news is that the surviving vendors will be in a better financial position to support users and to introduce new products.

David Wetmore, president of Goal Systems International, Inc. in Columbus, Ohio, said, "Consolidation benefits the industry because it reduces the waste of resources. If

you're constantly trying to beat each other's brains in, resources are not always spent on reinventing in the product line."

Goal has made no secret of its intent to grow by acquisition. In the past five years, the firm has scooped up eight companies.

### Interested in high prices?

Thomas N. Nies, chairman of Cincinnati-based Cincom Systems, Inc., said, "Dropping the market among fewer individuals makes them stronger." But, he added, "inevitably, that will lead to higher prices for software, which has been sold at prices far below what it should be. It's hard to tell customers that higher prices are in their best interest, but the vendors

who are supporting them will be financially stronger."

Users, for their part, acknowledge both sides of the coin. "Competition is healthy; it leads to better products at competitive prices," said Colby Springer, vice president of IS at Dallas-based Pearle Vision. "But everyone is for sale at the right price. I think that having three to five real alternatives in every market niche is acceptable."

Willard Cecchi, chief executive officer of Baseline Software, Inc. in Minneapolis, said, "Many companies will always feed the larger ones. Innovation, because it's not capital-intensive, will always be there."

Others said they are not sure where all this will lead. "It's hard to say if consolidation is positive or negative," said Paul Newton, acting executive vice president at Boole & Babbage, Inc.

Charles Wang, chairman of Computer Associates International, Inc. in Garden City, N.Y. — the firm most often seen by industry observers as the great acquirer — said he foresees an hourglass-shaped industry, with the largest vendors on top and a "death" of midsize vendors.

"There will be a flare-out at the bottom of little companies with great technology but that don't have strong service capabilities or a distribution network," Wang said, "and these small companies will always feed the larger ones. Innovation, because it's not capital-intensive, will always be there."

Others said they are not sure where all this will lead. "It's hard to say if consolidation is positive or negative," said Paul Newton, acting executive vice president at Boole & Babbage, Inc.

## FTC heat

CONTINUED FROM PAGE 117

becoming increasingly aware that it's important not to stifle hard, indeed brutal, competition," Calkins said.

**Why is the FTC, rather than the Justice Department, investigating Microsoft and Intel?**

The two agencies share jurisdiction over most antitrust matters and have a "clearance" process to determine which one will handle a particular investigation. The decision rests on such factors as which agency got to the case first and which one has the expertise, inclination and resources to do the investigation.

The Justice Department once covered the technology area by virtue of its IBM and AT&T consent decrees, but recently "the FTC, under the current leadership, has tried to reassert itself in the high-tech arena," said Christopher O. B. Wright, an antitrust attorney at Latham & Watkins in Los Angeles.

Janet D. Steiger, chairman of the FTC for the past two years, is steering away from the Reagan administration's deseg-

regation agenda and stressing enforcement of existing antitrust and consumer protection laws. Steiger's FTC has been investigating "areas of business behavior that were virtually immune during the Reagan administration," said Robert Pitoksky, a former FTC commissioner.

**How will the Justice Department and the FTC divide the computer industry?**

It is done mostly on a case-by-case basis, often depending on which agency has dealt with a particular company before. Art Amolsch, editor of the "FTC Watch" newsletter in Springfield, Va., speculated that the breakdown may end up this way: The Justice Department will handle IBM-related cases and large systems companies, while the FTC tackles the micro-computer market.

**Do investigations stifle innovation?**

That is debatable. "Some of these investigations probably aren't going anywhere, but they will make computer and software companies worry about what they're doing and clearing things with lawyers," said David Scheffman, a professor of competitive enterprise at Vanderbilt University in Nashville who worked at the FTC during the Reagan administration. He said the investigations also create uncertainty because the FTC has not clearly stated what it is concerned about.

But Ronald S. Katz, a partner at Conder Brothers in San Francisco, called such notions "utterly false." He said, "We've had strong antitrust laws for 100 years, and we have had the strongest economy in the history of the world. I

think those two facts are related."

**What happens next?**

The FTC staff will sift through the mass of documents obtained in its fact-finding mission and decide whether to recommend that the commission issue a formal complaint. Often, complaints are settled by both parties via a consent decree, which may require the company to cease and desist certain practices.

Whether the cases become formal complaints or finite out, they are already raising the industry's awareness of antitrust law. "There is no doubt that when an agency is active in investigating several companies in an industry, the other companies in that industry would be well-advised to watch their conduct closely," Calkins said.

## Defining the lines

**T**he hardest part of an antitrust case involving high-technology companies is determining the "relevant market," which must be defined before anyone can figure out if it is being monopolized.

The U.S. Supreme Court has decided to tackle that issue next year in the case of *Eastman Kodak Co. v. Image Technical Services, Inc.*, which will have a major effect on the computer industry. In essence, the court will decide whether the aftermarket for parts and service is a market separate from the market for the original high-tech machine.

Kodak was accused by 18 independent service firms of monopolizing the aftermarket for its copiers after it stopped selling replacement parts to the independents. Kodak said it wanted to ensure that customers got quality service, to protect its reputation and relationship with customers and to prevent the independents from siphoning its service revenue.

The computer industry, seeing many parallels with its business, has filed comments supporting Kodak. The manufacturers argued that buyers of high-tech equipment consider the cost and quality of maintenance and repair services when they choose among systems, so the aftermarket is an integral part of inter-brand competition.

Otherwise, the industry will be hit by numerous antitrust suits from independent service firms that are excluded from manufacturers' authorized service programs, commented a spokesman from the Computer and Business Equipment Manufacturers Association.

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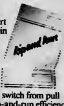
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THE STRAIGHT-PAPER-PATH



## Sun continues to form subsidiaries

BY J. A. SARGE  
CHIEF

MOUNTAIN VIEW, Calif. — Watching Sun Microsystems, Inc. this year has been like attending a mitosis class in biology. In March, Sun split off two subsidiaries: Sunsoft, Inc., a systems software company, and Sun Technology Enterprises, Inc., created to handle networking, peripherals and development tools.

In mid-September, a telemarketing subsidiary, Sunpro, opened its doors.

A week later, the formation of three more subsidiaries was announced. Sunpro, a software company with products

aimed at developers, Sunconnect, a networking company, and Sunpica, a peripherals company, now make up Sun Technology, which in the process has been relegated to an umbrella company role.

Sunpro primarily sells compilers for Scalable Processor Architecture (Sparc)-based computers. Sparc is Sun's reduced instruction set computing architecture but is licensed to dozens of companies that make competing and compatible workstations. The new Sunpro subsidiary also produces development tools under the label of Sparcworks.

"The business will let developers buy

compilers and tools separately," said Jon Kannegard, general manager of Sunpro.

Sunpro's compiler products will be sold through the recently created Sunsoft; other lines will be handled by Sunpress and Sun Microsystems Computer Corp., the company's hardware arm.

In addition, Sunconnect is now the arm for creating and marketing network integration software. Its wares will include the likes of Digital Equipment Corp. and IBM connectivity products as well as its parent's Sunnet Manager network administration software.

Sunpica deals in Sun's printing and imaging software and hardware, primarily the Sparcprinter and Newsprint software.

## INTERNATIONAL BRIEFS

### New grounds

► Spurred by its link with Novell, Inc. and projected demand for its newly released DR DOS 6.0 package, Digital Research, Inc. is set to open a retail operation in Hong Kong. The firm's Asia Pacific vice president, Richard Dixon, late last month confirmed to the Hong Kong business press that Digital Research will end its absence from the regional market upon its acquisition by Novell, slated to close by the end of this month.

### Opening doors

► The European Community Commission has proposed legislation that will open national public service contracts in the telecommunications, energy, water and transportation sectors to competition from countries throughout and outside the community, according to a recent report in the Belgian business press. The draft directive, which requires approval by the commission's Council of Ministers, will prohibit central and local authorities from discriminating in favor of national firms in the award of service contracts.

### Dangling the carrot

► While industry observers continue to counsel patience in dealing with the emerging Eastern European market, several recent deals could serve to remind the patient that there are some rewards. In addition to NCR Corp.'s contract to automate the 40,000 branches of the Russian Savings Bank — a deal that could be worth \$1.5 billion to AT&T's hard-won merger mate — others are busy selling personal computers in the East. Less than a year after its return to Romania, following a 10-year absence, IBM has signed on to supply \$4.1 million worth of Personal System/2s to the Romanian Ministry of Education and Science.

### Into Africa

► After years of operating there through distributorship agreements, Digital Equipment Corp. has opened its first subsidiary in Africa: DEC Morocco. Headed by DEC veteran Jean-Luc Dupuy, the new subsidiary's starting team — including its own sales force — has been largely recruited from among Maghrebian (Morocco, Algeria and Tunisia) professionals. DEC Morocco is headquartered in Casablanca — chosen, according to a company official, for the favorable economic climate for business development.

### Steeled for action

► Japanese steel manufacturer NKK Corp. and Dallas-based supercomputer maker Convex Computer Corp. are gearing up to bring their jointly developed Preemptor 5000 supercomputer series to the market by the end of the coming year, according to the companies. The new Preemptors will be the first computer fruits of the NKK/Convex alliance, sealed in 1988. Currently, the companies are co-developing application software and peripherals.

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# COMPUTER CAREERS

## How to rekindle motivational fires

BY JULIA KING  
SPECIAL TO PC

**M**otivating employees saddled with routine work is becoming a significant challenge for information systems managers.

"In the 1970s, IS jobs were very exciting," says Robert A. Zawacki, a University of Colorado researcher and professor of management who has spent the last 16 years studying what motivates IS workers.

Today, by contrast, between 70% and 75% of systems work is maintenance, Zawacki says. More companies are writing applications programs rather than developing them in-house. As they do, IS jobs are getting narrower and less interesting, he adds.

IS professionals have an almost unparalleled need for stimulation — new challenges, job diversity, achievement and recognition — Zawacki says, and jobs are providing less of that all these.

To counter these effects, some companies have put job rotation, education and training programs into place to help satisfy some appetites for job variety. Other companies have instituted frequent performance appraisals to keep managers better informed of IS workers' job expectations and goals.

Among these organizations is

Minneapolis-based Pillsbury Co., where management furnishes IS professionals with a wide range of job challenges and seeks to make IS workers aware of their contributions to the company's overall business success.

"One of the things that hurts motivation the most is when MIS contributions don't get recognized and when IS people don't feel that they are helping drive a company to something further," says Carl Wilson, senior vice president of MIS at Pillsbury.

### IS importance

Unfortunately, IS departments at many companies are still regarded as an expense rather than a strategic investment, Wilson says. That was the case at Pillsbury until 1986, when the company came to recognize the MIS department as a "strategic business enabler" and put it on par with other strategic departments, such as marketing and sales, he says.

Among other things, Pillsbury instituted what it calls its "A Day in the Life" program: IS professionals work side by side with workers in other departments to see firsthand what the department's IS needs are and how they can best be met.

However, career enrichment programs and job performance appraisals are only as good as the supervisors and managers who implement them, says Ray Hase,

personnel development manager at 3M Co. in St. Paul, Minn., which has a 900-member IS department.

For this reason, 3M provides managers who conduct performance reviews with extensive training in ways to match IS tasks with individual workers' skills and goals. This represents a big change from seven or eight years ago when reviews concerned performance alone, Hase notes.

Prodata, Inc., a computer systems consulting company with 260 IS professionals working in

eight cities, also places a heavy emphasis on performance reviews. It is one of the few formal opportunities managers have to communicate with far-flung employees, says Ron Pharis, city manager of the company's office in Boise, Idaho.

In between reviews, Pharis says, Prodata regularly acknowledges IS employees' contributions to the firm in a monthly newsletter, which notes workers' on-the-job achievements and their advances in technical training.

Regular performance appraisals

## Back on track

Here are some tips to help managers motivate IS employees:

- Provide regular job assignment rotation, including travel assignments.
- Offer frequent performance appraisals.
- Present achievement rewards and incentives.
- Provide in-house training on new systems and applications.
- Rotate systems maintenance work.
- Encourage employees to participate in decisions affecting them.
- Offer separate career paths for IS professionals interested in pursuing business- and technology-oriented jobs.
- Provide forums where IS professionals and employees in other departments can discuss IS requirements and how best to fulfill them.

and regular recognition programs help to satisfy IS professionals' needs for both acknowledgment and feedback, according to Zawacki.

Unfortunately, the communications skills inherently required for both of these processes is often sorely lacking in IS managers, he says.

"Many IS managers do a good job of setting goals, and then they disappear into the Bermuda Triangle," Zawacki says. "They're deploable on feedback — the single biggest motivator."

The solution to this problem, he says, is for companies to train both IS managers and the people they supervise in negotiation and conflict resolution skills, which, in turn, will make them more effective agents of change within their companies.

Wayne Pattison, director of data center operations at Kansas City Southern Railway Co. in Kansas City, Mo., knows firsthand the motivation and productivity benefits good communication skills can afford.

"One of the best things I have been able to do is to let computer operators have some input into the decisions I make concerning them," Pattison says.

Following recent staffing cutbacks at the railway's operations center, for example, Pattison says it was the computer operators, rather than the managers, who determined new schedules for remaining workers.

King is a free-lance technology writer based in Bittery Park, Pa.

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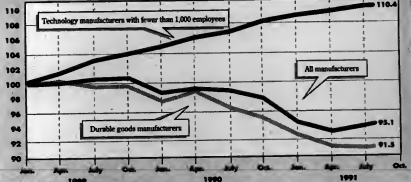
## Computerworld/CorpTech Career Index

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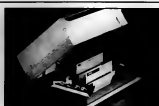
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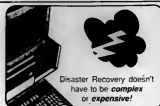
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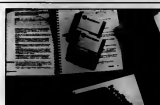
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# MARKETPLACE

## Making way for portables

IS managers get hopping on standardization issues to meet users' needs

BY ALAN RADDING  
SPECIAL ADVERTISING SECTION

**J**ust when information systems managers thought they had desktop personal computer purchases under control, users want more. Managers now find themselves wrestling with standardization issues for laptops and portables.

Once toppling managers' lists of concerns was the size and weight of portables. But yesterday's bulky, 22-pound huggables have given way to today's slim, 8- to 15-pound laptops, 4- to 8-pound notebooks and even lighter handheld computers. New priorities include such features as CPU speed, memory, storage, communications/networking and display screens.

However, one central issue is whether the portable computer will be the user's only computer — on the road and in the office. With power increasing and prices falling for laptops, organizations can duplicate the power of a desktop in a slim, lightweight portable at only a small premium over the cost of a desktop system — and certainly less than the cost of two systems.

"We're buying the same power in a portable as on the desk... We don't want to buy people two machines," says Shkolnik Lurie,

national director of information and technology at Price Waterhouse in New York. The company's portable standard is now a 20-MHz 80386SX with 60M bytes of storage and a 9.6K bit/sec. modem.

Even if managers decide against duplicating the desktop in a portable, they will still want to maintain a consistent operating environment across the desktop and portable. That includes Microsoft Corp.'s Windows 3.0, which raises the ante in portable computers just as it has in desktop systems.

### Desktop duplicates

"People want the same operating environment in their portable as they have in their desktop," says Leslie Fiering, an analyst at Gartner Group, Inc. in Stamford, Conn. Users who run under Windows at the office won't want to run under DOS on the road.

As a result, sales of 80386SX-based portables with 1M to 2M bytes of memory, a 20M- to 40M-byte hard disk and an IBM Video Graphics Array (VGA)-compatible screen — the minimum configuration necessary to run Windows reasonably well — are taking off, Fiering reports. And most organizations opt for more memory and more storage.

But how much power users need in a laptop or portable computer depends largely on how the

machine is being used. The Gartner Group classifies portable computer users into three groups, each requiring a different level of power and performance, Fiering says.

The first group is utility/convenience users. They require only a limited subset of a desktop computer's capabilities. The second group — the majority of users — includes those who expect most but not all the capabilities of the desktop computer. The third group consists of those whose office is wherever they happen to be. "These people need to replicate the desktop system in the field," Fiering says.

With the cost of processors, memory and storage dropping, some managers prefer to buy as much as they can afford rather than try to match the requirements of individual users.

"Speed is cheap, so you might as well get an 80386. And disk drive capacity is cheap, so you can afford to boost storage," says Bard White, MIS director at Spalding Sports Worldwide.

Spalding equips its field sales force with portable PCs running Lotus Development Corp.'s 1-2-3, word processing and commu-

nications packages. The company's original laptops were 80286-based Compaq Computer Corp. boxes with 40M bytes of storage and a modem. Today, White buys 80386-based laptops and expects to move to 1486-based machines in the not-too-distant future. "It depends on the cost, of course, but if the cost differential is small, we'll go with the fastest we can get."

Display is another key issue. Some users prefer more powerful machines, such as 20-MHz, 80386SX- and 80386-based systems, because they typically come with better screens, says Mike Devick, information services officer at Reliance Insurance Co. in Philadelphia.

Because Windows requires better screen display, Coopers & Lybrand standardized on a VGA-compatible (640- by 480-pixel resolution) monochrome display, according to Stephen Rood, formerly the microcomputer manager there and now head of Rood & Associates in Ossining, N.Y. "We looked at color, but it was a little pricey. Most users were willing to give up color if the resolution was there," he adds.

Communications features were once considered options but are now virtually standard on portables. Still, the speed of the modem is an issue. Blue Cross/Blue Shield of Massachusetts uses a 2,400K bit/sec. modem,

but "we'd be better off with a higher speed modem, 9.6K bit/sec., V.32 class," says John Thibodeau, team leader for information delivery.

The V.32 specification describes a data line modem. Many of the 9.6K bit/sec. modems going into portables are fax modems. They transmit at 9.6K bit/sec. for fax but at a slower rate for data. "A 9.6K bit/sec. fax modem is really limited," Thibodeau says, but the high-speed (V.32) data modems are considerably more expensive.

**Source of savings.** Spalding's White opts to save money on the modem: "We include a built-in modem, but we don't need fast ones." Consequently, Spalding buys only a 1,200 bit/sec. modem. The sales force uses the modems for minimal message sending.

Managers must also consider network communications. "We use a Xircom pocket connector so [laptop users] can hook up to the network," Thibodeau says.

However much speed, memory, storage, communications and display capability IS managers standardize on for portables, they shouldn't expect the issue to stay resolved for long, Fiering warns. "We've found the acceptable life for laptops is 24 months before users feel the laptops are too heavy and too slow." That compares with a three- to five-year acceptable life span for desktop systems.

Radding is a free-lance writer in Newton, Mass.

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# INDUSTRY ALMANAC

### RECOMMENDATION CHANGES

**UPGRADED FROM ATTRACTIVE TO BUY:** Micrologix, Inc. (Mfson Securities Corp.). Earnings for the next few quarters should continue to improve, correlating with greater demand for personal computers late this year and in early 1992. New products expected this month from Apple Computer, Inc. could stimulate end-user demand. Micrologix has capitalized on merger action in the PC retailer business by stepping into big corporate accounts left unattended by other stores.

## NEW COVERAGE

**INITIAL RATING OF HOLD:** Synaptics Communications, Inc. (Prudential Securities, Inc.). The company leads the market for local-area network wiring hubs, which are hardware devices that help users manage the physical layer of networks. The market is expected to grow 25% to 40% per year for the next four years.

—Increasing competition among Ethernet hubs  
—Synoptics' biggest money maker — is cause for concern. Profitability will suffer at the hands of rivals Calcomp Corp., Ungermann-Bass, Inc. and Calbourn Systems, Inc. (see below). Synoptics will see lower profit margins for the next six to 12 months, not the 25% pretax margins it has enjoyed. Unlike Calbourn, which sells directly to end users, Synoptics uses multiple sources, including direct, value-added resellers, systems integrators and distributors. Often, Synoptics representatives sell against one another at the same account, undercutting one another's prices.

**INITIAL RATING OF BUY:** Cabletron (Prudential). The company is closing the gap between itself and hub market leader Synoptics. Cabletron as a whole is more profitable than Synoptics, thanks in part to Spectrum, network management software introduced in September 1990. Cabletron's direct sales approach works well. The 12-month target stock price is \$55 to \$60.

## ANALYSIS IN BRIEF

**Industry update: Personal computers**  
Prudential, Sept. 26.

August sales results threw cold water on what looked to be the first signs of an upturn in the U.S. PC market. Unit sales fell 17% in August after rising 11% in July. Dollar sales plunged 35% in August, as the average selling price per PC dropped

**21%.** Demand for IBM's and Compaq Computer Corp.'s 80386SX and 80386DX machines waned because of anticipated new products and associated price cuts. Although Apple's sales normally pick up as the school season nears, unit sales fell 23% in August vs. July. Summertime winners were the clones, whose unit share jumped 15% and whose dollar share surged 20%.

### Workstation website

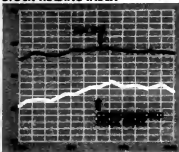
**Burr, Starnes & Co., Sept. 27.**

New servers recently introduced by Sun Microsystems, Inc. helped plug the gap in the firm's high-end line. Also, Sun will clearly benefit from the lack of low-end systems from IBM and Hewlett-Packard Co.

Meanwhile, Mips Computer Systems, Inc. unveiled a new semiconductor, the R4000, last week. Five other semiconductor companies will help Mips manufacture the chip. Introduction of the R4000 enables Mips and other vendors in the Advanced Computing Environment consortium to stick to new product schedules next year.

JIM S. NASH

## STOCK TRADING INDEX



## Computerworld Friday Stock Ticker

CLOSING REGISTRATION: OCTOBER 4, 1992

TOP PERCENT GAINERS	
Quintec Center Inc.	22.6
Morg Labs Inc. (S)	20.0
Sequent Computer Sys.	20.0
EMC Corp.	19.3
Logica Corp.	19.0

TOP PERCENT LOSERS	
Knowledgeware Inc.	-35
Intellipoint Inc.	-22
Data Switch Corp.	-21
Remcon Inc.	-19
Lattice Development	-15

TOP DOLLAR GAINERS	
Leggett Corp.	4.8
Stanford Int'l	4.8
Mesa White Electronics	4.0
Policy Management Sys.	3.8
Acadia Systems Inc.	3.7

TOP DOLLAR LOSERS	
Knowledgeware Inc.	-4
Lotus Development	-3.1
Cray Research Inc.	-3
Microsoft Inc.	-3
IBM	-2

Each	52-Week	Range		Oct. 4	% to	% to
				Close	High	Low
					Change	Prev.
QTC	13.00	4.00	IBM Computer Sys.	11.75	-0.80	-6.00
PRR	27.00	22.50	Auto Data Processing	26.00	1.10	2.50
QTC	80.20	37.00	Autodesk Inc.	48.00	-2.00	-4.00
QTC	80.00	14.00	BBK Systems Inc.	20.75	-0.25	-1.00
QTC	64.00	17.75	BBK Software Inc.	16.25	-1.75	-3.00
				30.25	0.75	2.00

QFC	94.89	16.89	Computer Peripherals	53.75	0.29	0.00
QFC	26.89	8.13	Congress Inc.	1.75	-0.25	-0.15
QFC	11.15	3.50	Computer Accessories	7.75	-0.25	-0.15
QFC	17.75	3.50	Computer Hardware	94.75	0.00	0.00
QFC	78.25	26.75	Computer Software	7.00	-0.75	-0.75
QFC	11.50	3.50	Computer Tech Group	56.75	0.50	0.30
QFC	22.75	13.00	Computer Systems	8.50	0.30	0.15
QFC	13.25	3.75	Computer Networks	47.75	1.00	0.00
QFC	92.25	21.00	Computer Services (QFC)			

Each 50-Week Period	Oct. 4 Close	Feb. 1997 Change	Mar. 97 Open
1996-97	100	100	100
1997-98	100	100	100
1998-99	100	100	100
1999-00	100	100	100
2000-01	100	100	100
2001-02	100	100	100
2002-03	100	100	100
2003-04	100	100	100
2004-05	100	100	100
2005-06	100	100	100
2006-07	100	100	100
2007-08	100	100	100
2008-09	100	100	100
2009-10	100	100	100
2010-11	100	100	100
2011-12	100	100	100
2012-13	100	100	100
2013-14	100	100	100
2014-15	100	100	100
2015-16	100	100	100
2016-17	100	100	100
2017-18	100	100	100
2018-19	100	100	100
2019-20	100	100	100
2020-21	100	100	100
2021-22	100	100	100
2022-23	100	100	100
2023-24	100	100	100
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2026-27	100	100	100
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2079-80	100	100	100
2080-81	100	100	100
2081-82	100	100	100

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OTC	7.00	1.00	Hogart Systems Inc.	0.00	0.00	0.00
OTC	20.25	7.75	Information Resources	27.00	-1.00	-8.25
OTC	0.00	0.00	Intertec Corp.	0.00	1.12	14.00

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Computer Systems Off 2 54[illegible]

NYSE	19.13	0.79	Motor Technology	14.83	0.00	0.00
NYSE	71.88	48.79	Monrovia Inc.	26.75	-0.75	-0.30
NYSE	0.00	0.00	National Semiconductor	4.20	0.00	0.00

[illegible]Software & DP Services OM 0 191

ONG	88.90	17.00	Additive Systems Inc.	92.78	8.80	8
ONG	18.88	9.80	Atencio	8.88	-0.88	-6
ONG	26.50	13.00	Atencio Corp.	48.50	-	-
ONG	38.50	13.00	American Export Systems	91.78	-8.53	-8
ONG	17.28	7.90	American Shipping Inc.	13.00	-0.38	-2
ONG	4.80	1.80	American Ship	3.13	-0.13	-1
ONG	18.88	10.24	Asahiya Int'l	14.28	1.60	7
ONG	18.88	8.13	Asahiya Int'l	15.78	0.78	7

OTC	18.00	7.00	Ampligen Inc.	18.00	9.50	1.47
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OTC	38.38	14.75	Charmaine Inc.	30.35	0.63	8.14
OTC	14.75	8.89	LGM Corporation	14.80	0.06	0.38
OTC	4.30	5.05	Reliance Inc.	4.25	0.00	0.00

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OCTOBER 7, 1991



# Rumor mill stirring at Prime

## ANALYSIS

BY SALLY CUSACK  
OF ENR

BEDFORD, Mass. — Change is in the wind at Prime Computer, Inc., but the million-dollar question is, what kind of change, and when will it occur? Definitive answers are eluding both analysts and users.

Since venture capitalist and leveraged buyout firm J. H. Whitney & Co. rescued it from a hostile takeover attempt two years ago, Prime's minicomputer business has run up significant

losses as proprietary customers defect to other platforms.

D. R. Holdings, Inc. in Delaware reported a loss totaling \$332 million in the second quarter of 1991. D. R. Holdings is the holding company established by J. H. Whitney to manage its Prime acquisitions.

Meanwhile, ComputerVision — seen as the weak sibling when acquired by Prime in 1988 — has been successful in the computer-aided design and manufacturing marketplace.

"There is a strong sense of activity surrounding ComputerVision," said Kathy Hale, se-

nior analyst at Dataquest, Inc. in San Jose, Calif. "There are all kinds of rumors flying about."

However, Hale added, "At a certain point, the activity is so high, there is no sense in trying to call the outcome."

### What's in store

Customers, analysts and insiders seem to agree on the following as the most likely outcome:

• J. H. Whitney could take ComputerVision public before the end of the year, if possible. ComputerVision is currently San Microsystems, Inc.'s largest OEM customer, and its recently an-

nounced Cadis 5 software has been generally lauded by analysts as state of the art in the mechanical computer-aided design marketplace.

• J. H. Whitney could try to sell the minicomputer systems business. Rumored buyers include Hewlett-Packard Co., Data General Corp. and Digital Equipment Corp. Most Prime customers run in a Pick-like software environment, and recompiling these applications to HP or DG PC platforms would be relatively easy, analysts said.

IBM may also purchase a part of Prime's information database software to the RISC System/6000 platform — a project that has already been completed within Prime.

• Both the ComputerVision business unit and the Prime Service unit could go public, with the latter emerging as a third-party maintenance company.

It has also been rumored that HP would look to purchase a part of the Cadis 5 software for the HP 700 workstation platform, in addition to possibly purchasing the minicomputer business. Shao Wang, vice president at Smith Barney, Harris Upham & Co. in New York, said he would be surprised if HP were involved in this type of arrangement.

Russell R. Plante, chairman of D. R. Holdings, has said on record that he would like to do a public offering or some type of private financing arrangement for the company.

## IBM, Apple

FROM PAGE 1

anything," said Mike Bailey, a systems integrator at Lockheed Missiles and Space Co. in Sunnyvale, Calif. "Maybe later on it will, but only then if they get a lot of user input when they create the products. Ultimately, they may design something that users don't want."

Other users didn't seem bothered by the delay in the products, which aren't scheduled to begin arriving for two to four years.

"We've just upgraded our Macs, so our next big wave of purchasing is still several years off, probably around when these things first start to arrive," said Rick Christensen, manager of technical support at Manville Corp. in Denver.

In the long term, the tech could also radically alter the power structure in the PC industry. Apple and IBM now face severe challenges from Microsoft

Corp., which has swiftly caught up with both vendors technologically and is promising to carve out huge chunks of burgeoning areas such as multimedia and pen-based computing. Both Apple and IBM "are riding each other's back into areas they both want and need to be," said Michelle Prouton, an analyst at Cowen & Co.

"We're trying to take the industry to a new level of technologies that are too expensive for any of us to develop on our own," Sculley said. However, both companies will continue to "vigorously compete" in their proprietary hardware product lines, according to IBM President Jack Kuehler.

One joint venture will develop an advanced operating system based on object-oriented programming that streamlines development work by allowing portions of old programs to be reused.

The company, called Taligent, will be located in the Silicon Valley and will base its efforts on a 4-year-old Apple object-oriented system research and development project known as Palk.

IBM will integrate portions of the Taligent technology into OS/2 and AIX along the way. The Taligent product will also be designed to be compatible with systems based on OS/2, AIX and the Macintosh, Kuehler said.

The ability for system servers to both IBM and Apple machines has excited users. "We'll be making a lot more of our PCs and our networks, and it would be very, very difficult to achieve this if the two major forces in the industry hadn't gotten together to combine strategies," Christensen said.

Another joint venture, called Kaleida, will work on building multimedia standards for computers that use video, audio and animation.

A third venture will involve Motorola, Inc. in developing a line of microprocessors based on reduced instruction set computing (RISC) technology. The PowerPC chip design will be used by both Apple and IBM as the basis for their next generation of desktop computers. The chip is scheduled to be introduced in two to three years.

Motorola is expected to take the RISC System/6000's multi-processor chip design and shrink it into a single chip that could be used to power computers ranging from handheld devices to engineering workstations.

The chips will be sold to all comers. Sculley said that eventually all Macintosh computers will use PowerPC chips.

Another technological arrangement will be the development of a new Unix operating system called Power-open. Its goal will be to combine the ease of use of the Macintosh with a Unix that has wide appeal. The resulting system will be able to run Macintosh software on either Apple or IBM computers.

Mid-Atlantic Senior Correspondent Johanna Ambrosia contributed to this report.

## Execs view the alliance

How will the fruits of the Apple/IBM union affect the industry?

Jim Mann, president of Lotus Development Corp.

"For too long, we've focused on automating singular tasks and on how to improve productivity. [The new products] will buffer customers from the complexities of working in a multiple-platform environment."

Ron Whittier, vice president of the Software Technology Group at Intel Corp.

"The market will be expanded. It will offer new richness and ease of use on the PC platform."

Ray Noorda, president and CEO of Novell, Inc.

"It will inspire other relationships."

Philippe Kahn, president of Dardel International, Inc.

"Object-oriented is to the software industry what the invention of the microprocessor was to the hardware industry."

## Sybase opts for per-user pricing; costs soar for some users

BY BRIAN S. BOZMAN  
OF ENR

EMERYVILLE, Calif. — Sybase, Inc. revote its book on pricing recently. From now on, it will base the license fees for its SQL Server relational database product on the number of people who use it. This per-user pricing affects all Sybase license contracts written after Sept. 15.

Sybase confirmed the change last week. "We've instituted user-based pricing across the board," said Richard Yanovich, vice president of marketing at Sybase. "We contacted all customers through one means or

another, initially through a direct-mail piece and a formal customer notification letter." Some users were informed of the change by Sybase sales representatives.

Per-user pricing will affect all sizes of Sybase database servers, whether they work on San Microsystems, Inc. workstations, IBM Personal Computers or Digital Equipment Corp. VAX computers. Until now, Sybase had limited its per-user pricing program to low-end systems with one to four users.

There are several pricing tiers, the lowest of which covers the first eight users of a system,

Yanovich said.

The Sybase pricing system was created by extensive interviews with 100 customer accounts last year indicated that it would be acceptable, the company said. For now, per-user pricing will be run on an honor system, Yanovich said. "We're trusting that customers are willing to pay for the value they receive," he said. Other software vendors enforce per-user pricing through a software-use monitor that is resident on the database server.

Sybase claimed that prices for many Sybase sites will not change very much under the

new per-user pricing policy. However, some Sybase users reported that prices for low-end products, such as the SQL Server for OS/2, have tripled.

### Prices climb

Bill Sapor, a project manager at Chevron Canada in Vancouver, British Columbia, was told that the 1995 price for each SQL Server for OS/2 database engine will climb to more than \$3,000 for the first 10 users of each server. Chevron Canada has 35 such servers.

Unlimited use of the Sybase SQL Server for OS/2 jumped to nearly \$4,000, Sapor said.

A Sybase official confirmed that the base price for SQL Server for OS/2 had nearly tripled from \$995 to \$2,995, and the price for an unlimited number of users had doubled from \$3,995 to \$7,995 for OS/2 machines. However, he explained that the old 1995 was for five users and that the higher price now covers 10 users.

News of the change traveled rather quickly. Some customers said they have not yet been notified. Others learned of it through casual conversations with other users.

Users said only a few of the customers attending a Sept. 11 Sybase user meeting in Boston knew of the pricing change, which took effect four days later.

## NEWS SHORTS

## Unisys spins off defense unit

Long rumored to be looking for a buyer, Unisys Corp. decided to go public last week with the sale of its defense systems group and announced plans for an initial public offering. Unisys hopes to raise \$633 million through the sale, with an undisclosed portion of the proceeds going to reduce Unisys' crushing debt load of \$3.6 billion. The 17,000-person defense division will be called Parasys, Inc. and will be headed by Frederick F. Jensen, the current president of the McLean, Va.-based division.

## CSC buys network group

Computer Sciences Corp. last week completed the purchase of Inetcom Solutions Corp., a Bethesda, Md., supplier of systems for the telecommunications industry. The privately held Inetcom, formerly Telic Corp., has an annual revenue of about \$50 million.

## Adobe brings out font processor

Adobe Systems, Inc. ventured into the hardware arena with the announcement of the Adobe Type 1 Coprocessor, a fast-rendering chip that should help eliminate the bottleneck caused by software-generated character creation. The coprocessor is capable of rendering text at up to 2,000 char./sec. Adobe called the chip "a very fast, hardware-based version of Adobe Type Manager software."

## Knowledgeware sees problems

Knowledgeware, Inc. dropped a bomb last week, announcing that results for its first quarter, which ended Sept. 30, will be "substantially" below expectations and could likely cause a net loss. The news comes shortly after an executive reorganization brought about by the resignation of Terry McGowan, president and chief operating officer, and Donald Ellis, senior vice president of finance and administration.

## Wang releases Upword

Wang Laboratories, Inc. last week officially unveiled Upword 2.0, its document processor for the Microsoft Corp. Windows 3.0 environment [CW, Sept. 23]. The package integrates Windows and non-Windows applications and is targeted toward the work-group computing and image management environment. Priced at \$495, the software is scheduled to ship later this month.

## CA dropped from board suit

Computer Associates International, Inc. last week was dismissed as a co-defendant in IBM Credit Corp.'s suit over use of subleased computer equipment. IBM had brought the original suit against lesser Commodore, Inc. earlier this year and then amended the complaint in August to bring in CA as a Commodore client. CA said late Friday that it was dismissed from the case by "agreement."

## AT&amp;T upke on fast-packet bandwidth

AT&T upke last week about future relay on the customer premises equipment side with its announcement of the BNS-1000 Fast Packet Switch, reported to handle up to 15,000 simultaneous two-way connections. The router component to the fast-packet family will be supplied by Wallflete Communications, Inc. per a recent agreement announced last week between the two companies.

## Floating Point in trouble

Public trading of stock in Floating Point Systems, Inc. (FPS) was suspended last week after the Brewster, Ore., company said it has failed to get financing necessary to preserve any value for existing shareholders. FPS will seek other financing alternatives to ensure the continued manufacture, sale and service of its current and future products, a company spokesman said.

## Users get jump on Oracle 7.0

Vendor gives aid to those tweaking 6.0 while awaiting database upgrade

BY JEAN S. BOZMAN  
CHICAGO

MIAMI BEACH — Despite expectations of an announcement last week, users of the Oracle Corp. relational database may have to wait until mid-1992 to get Version 7.0, which supports distributed databases. But some users, with guidance from Oracle software engineers, are already coding applications that will use Version 7.0's features.

At the International Oracle Users Group (IOUG) meeting here, Oracle told users that selected sites had recently begun to use Version 7.0 in beta-test and quality assurance programs.

Version 7.0, which will replace Version 6.0, has several key features to aid distributed database processing, including two-phase commit, distributed query management and "triggers" that speed transaction processing in the database server.

Some users said they have already started to program data-

base triggers using their current Oracle 6.0 servers. Triggers automatically launch cause-and-effect updates to database tables. For example, they would delete items from a company's inventory database in Chicago when those items are ordered by customers in New York.

"With Version 7.0, you can

Industry analysts said the introduction of Version 7.0 had been pushed back from the summer of 1991 to make Version 7.0 more competitive with database products from Sybase, Inc. and Ask Computer Systems, Inc.'s Ingres Corp. The Sybase and Ingres databases already have two-phase commit, triggers and

referential integrity. "Version 7.0 plugs all the gaps we had in Version 6.0," said Oracle Chief Executive Officer Lawrence Ellison. "Version 7.0 will run about 25% faster than Version 6.0." He added that Version 7.1 would include support for complex data objects.

Oracle also announced SQL\*Net 2.0, a rewrite of the SQL\*Net networking software that links Oracle databases even if they are on different hardware platforms [CW, Aug. 12].

SQL\*Net 2.0 is scheduled to ship by year-end for a variety of Unix, IBM, Digital Equipment Corp. and Hewlett-Packard Co. machines.



Oracle's Ellison says the unannounced Version 7.0 will help assuage competitive pressures.

turn on the business rules you wrote into your Version 6.0 applications," said Jim Raper, president of the Southeast chapter of the IOUG, in his explanation of how Version 7.0 would automate updates that are essentially manual and much slower now.

## Oracle retreats from Nippon's millions

BY JEAN S. BOZMAN  
CHICAGO

MIAMI BEACH — Oracle Corp. last week took another step back from its June agreement in principle to gain \$200 million in financing from Nippon Steel Corp. in Tokyo in exchange for a 49% share of the Oracle Japan subsidiary [CW, June 10].

At the same time, Oracle said it had received a one-year, \$100 million credit line from a syndicate of right banks.

The new loan came just as Oracle's 30-day extension on another bank syndicate's \$100 million line of credit expired [CW, Sept. 9].

However, Oracle Chief Executive Officer Lawrence Ellison left the door open for continued negotiations with \$19.3 billion Nippon Steel, which could yield a marketing partnership in Japan and a reduced amount of financing.

"The courtship's been going on for a while. We either need to get married or to get divorced," Ellison told industry analysts here last week. "In six weeks, we should either have a conclusive decision or decide to go our separate ways."

In early September, Oracle indicated that negotiations with Nippon Steel had bogged down

because of Oracle's concerns that the Japanese firm's systems integration unit would build proprietary manufacturing applications on the Oracle relational database engine.

Oracle's proprietary manufacturing applications went into general release last week.

Industry analysts were pleased with Oracle's rejection of the original Nippon Steel deal, saying it signaled Oracle's return to financial stability one year after

ter a dramatic \$29 million loss.

"The average user doesn't seem to be very concerned about the Nippon Steel deal," said David Kreines, a database manager at the Educational Testing Service in Princeton, N.J., and chairman of the International Oracle Users Group conference.

"They probably feel somewhat reassured by the fact that Oracle had a profitable quarter and that Oracle's stock went up," Kreines added.

## Compaq color portable due

The onslaught of new moves in the portables market is under way, with IBM and Compaq Computer Corp. leading the pack.

Compaq plans to introduce today its Portable 486C, a 17.6-pound, AC-powered portable with an IBM Video Graphics Array-compatible color screen.

Last week, IBM cut prices on its Personal System/2 L405X laptop by 23%, from \$5,245 to \$3,995.

Compaq's Portable 486C sits on the Extended Industry Standard Architecture, runs at Intel Corp.'s 33-MHz i486DX chip with 4M bytes of random-access memory (expandable to

32M bytes) and has extensive built-in security features, including what Compaq calls its DriveLock security facility. Users can set it so their hard drives can be accessed only with a password. The Portable 486C retails for \$9,999 with a 120M-byte hard drive. Compaq expects to ship in the mid- to late fourth quarter.

Many analysts said they liked what they saw in the Portable 486C. "It's an exceptional product," said Tim Bajarin, executive vice president at Creative Strategies Research International, Inc. "I would say it's the first portable environment I've ever considered putting on my desk to kick out my desktop."

# Timeplex moves beyond 'T1 vendor' image

BY JOANIE M. WEXLER  
CW STAFF

**NEW YORK** — On the heels of being bought by Ulsay Corp. to a \$2 billion Swiss telecommunications firm, Timeplex, Inc. last week made strides in its year-old mission to revamp its image from T1 vendor to enterprise network supplier. The firm made sweeping product and service announcements that should nurture its existing worldwide customer base, analysts said.

In a briefing here, the company described enhancements to its product line, which include international network design, integration and management outsourcing services that are available immediately. On the product side, Timeplex added such offerings as a Simple Network Management Protocol-based local-area network and wide-area network management system and frame-relay products in the local and wide area (see chart).

The first signs of customers buying into Timeplex's revised role have recently surfaced. For example, Timeplex said it has inked an 800-router deal with Nationwide Anglica, a UK-based

bank. Timeplex will officially announce the deal this week.

However, while Timeplex executives said they were 51 sites into a 600-router installation at an existing customer site, Great Western Financial Corp. in Northridge, Calif., said the contract is not a done deal, according to Chuck Matthews, Great

from among Timeplex, Newbridge Networks, Inc. and Network Equipment Technologies, Inc. this week for a corporate-wide network revamp. He said he has not evaluated LAN vendors because with the three finalists, "we got more of a total solution."

Also last week, Timeplex voiced its goal to expand its product family to include standards-based cell-relay systems that are interoperable with its installed T1 multiplexer base.

"It's important to us to be able to grow our architecture over the next few years without having to totally replace the equipment," said Jens Reed, assistant vice president of telecommunications at insurance firm Geico Corp., a Timeplex user in Washington, D.C.

Timeplex executives also discussed the firm's new ownership, which shifted in the 11th hour from a joint Swiss/South African venture to a 100% purchase by Bern-based Ascom Holding AG. The \$207 million sale was consummated Sept. 27.

"It's a real positive development that Ascom is the only owner," said Rick Malone, a principal at Vertical Systems

Group, Inc., a consultancy in Dedham, Mass. "First, you're more nimble in getting decisions made with only one parent. Second, the South African involvement had a political stigma to it," he said.

\*According to the Oct. 4 issue

## Evolving with the times

No longer is the shadow of a financially ailing parent, Timeplex looks to outsourcing services and the enterprise network

	Added 1990-1991	1992
LAN equipment	• Bridge/router • FDDI concentrator	• Frame relay on bridge/router (Q1 1992) • SDMS/T1 interfaces on bridge/router (1992)
WAN equipment	• T1/T3 hub • ISDN gateway and T1 access systems	• Frame-relay switch (Q1 1992) • Standard cell-relay switch (future)
Network management	• IBM Netview/PC and AT&T • Accountlink LAN manager (Q4 1991)	• SNMP-based integrated LAN/WAN manager (Q1 1992) • OSI compliance (future)
Network services	• Outsourced network management, design and integration	

Source: Timeplex, Inc.

CW Chart: Joanne Gosselin

# ACE shows progress but user skepticism remains

BY MARYFRAN JOHNSON  
AND J. A. SARGENT  
CW STAFF

In the six months since a handful of vendors — led by Digital Equipment Corp., Microsoft Corp. and Compaq Computer Corp. — raised the curtain on their Advanced Computing Environment (ACE) alliance, most of the show to develop a new desktop computing standard has been hidden behind that big curtain.

Yet in a very public display of progress last week, Microsoft and The Santa Cruz Operation (SCO) previewed the two operating systems that will run on ACE hardware when it begins to surface in 1992.

The loosely knit organization of hardware and software vendors has also shown a surprisingly steep growth path. From 21 initial members — including DEC, SCO, Compaq, Microsoft and Mips Computer Systems, Inc. — the alliance now includes 181 vendors. Industry watchers are cautiously optimistic about ACE's chance of tempting enough users to grab significant market share on the desktop.

"ACE is real, but it won't have substance until we see more third parties — both 386 clone companies and key application software vendors — jump in," cautioned Jeffrey Carin, an analyst at Montgomery Securities in San Francisco.

By mid-1992, ACE members said, users will find Microsoft's New Technology (NT) operating system running thousands of MS-DOS applications across Intel Corp.-based hardware and reduced instruction set computing (RISC) machines based on Mips' R4000 chip.

About that same time next year, SCO officials said, they will be marketing a new version of the Open Desktop (ODT) operating system for Mips platforms as well as for Intel machines. ODT runs only on Intel now, but when it moves to the RISC platform, all its current applications can be recompiled to run there. DEC said its 4,200 Ultrix applications also will run under ODT.

"If half of that is true, it's still fantastic," said Ken Kralovich, MIS director at Carleton Technologies, Inc., an aerospace manufacturer in Orchard Park, N.Y. "The idea of pulling PC software to a Unix platform

without some klugey piece of software in place would be excellent news."

"I think ACE illustrates an industry trend that big vendors finally recognize operating systems and hardware are a commodity," said Robert Foster, supervisor of DEC systems for the information management department at Sikorsky Aircraft in Stratford, Conn.

## Skeptics in the crowd

Not all users are confident ACE will deliver on its promises.

"I am a strategic customer of DEC's, and I don't have a clue what's going on," said Mohamed Elsay, director of scientific computing in the biostatistics division at the Dana Farber Cancer Institute in Boston.

As DEC merges its Ultrix operating system into this future version of ODT, Elsay said, he is concerned about a rocky ride on that migration path. "I have things break just moving from Ultrix 4.0 to 4.1," he said. "So I'm not going to believe that everything will go so smoothly in this next move."

That kind of skepticism is understandable because the major players in the consortium hold differing views of how users will put ACE-related software and hardware to work.

Once ACE becomes a reality, customers with Intel-based personal computers and Mips-based workstations are supposed to be able to run applications across

platforms without recompiling, as long as they stick with operating systems from one vendor.

Applications that run under Windows NT, for example, will run on PCs and Mips-based systems as long as users have installed DOS, NT for Intel and NT for Mips operating systems. Applications that run on SCO's operating system will not automatically run under NT.

While ACE shapes up to deal its hand, users should also stay alert for vendor hype.

DEC and Silicon Graphics, Inc., for example, claim they already have "ACE-compatible" hardware to sell. Yet ACE compatibility means next to nothing, said James Billmeyer, vice president of software marketing at Mips. The key term is "ACE-compliant," referring to products that meet the Advanced RISC Computing (ARC) specifications from ACE.

The ARC specifications, for example, require hardware to have certain audio abilities, an Ethernet connection and other requirements. "You cannot obtain ARC compliance until the hardware runs the operating system" in mid-1992, Billmeyer noted.

Last week, Mips previewed the R4000 chip running in a prototype ACE machine. While the chip will initially run at 50 MHz, scaling up to 100 MHz, its potential benchmark ratings are not as high as what Hewlett-Packard Co. provides today.

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## TRENDS

## Wide-area networks

As the percentage of interconnected PC LANs continues to grow, so does the desire to link to widely dispersed networks

42% No  
38% Yes  
Do your PC LANs communicate over wide-area networks?

## Top 5 WAN connections used for LAN-to-LAN communications

Suitable for applications requiring higher speeds, expensive private T1 links with accelerations of up to 1.5M bit/sec. are gaining on the more commonly installed private 56K bit/sec. lines

Totals over 100% because of multiple WAN connections

Private 56K bit/sec.

Private T1, 1.5M bit/sec.

Dial-up modems

Private fractional T1

Public X.25 9.6K bit/sec. to 56K bit/sec.

Private T1, 1.5M bit/sec.

Dial-up modems

Private 56K bit/sec.

Private frame relay

Private fractional T1

Now

In two years\*

\*Projected

Average percentage of desktops that are connected to PC LANs: 47%

Average percentage of PC LANs that are interconnected: 51%

Percent of respondents/Total: 600

CW Chart: Jonell Connors

FYI

Source: Business Research Group, Newton, Mass.

## NEXT WEEK

Despite recent publicity about E-mail monitoring, the subject of IS ethics remains largely the province of academicians and consultants. IS professionals such as Alana Shooters who are willing to risk their jobs by raising ethical questions are still rare. Industry observers say IS needs to think about the important issues. See Executive Report.



Alana Shooters

No longer is it true that a single monolithic computer is the most cost-effective option for a company. A group of AS/400s can provide performance comparable to that of a larger minicomputer (or even a mainframe) at lower cost. Just as importantly, using AS/400s can offer firms the benefits of distributed processing. See In Depth.

## INSIDE LINES

## Look here: Systempro

Compaq will counter IBM's hot-selling PS/2 Model 95 with an upgradable, low-end Systempro based on the 33-MHz Intel 1486 chip. Also announced at Network next Monday will be two other members of the Systempro LT family, one based on the 25-MHz 80386 and one based on the 16-MHz 486SX. Observers say these Systempros will serve as the basis for follow-on, higher-end Systempro products based on Intel's P24 dual-speed processors. Look for that announcement in November. Meanwhile, several corporate and government users say that for the first time, Compaq's products cost less than AST's, and in some cases, they undercut Dell's as well.

## Printers getting DECed

Some DEC customers with the latest Apple Macintoshes in their shops are running into annoying printer foul-ups between DEC's Pathworks for Mac networking software and Apple's System 7.0 Macintosh operating system. One West Coast user, whose printer refuses to work with System 7.0 drivers, said, "It's like dealing with water wars." A DEC spokeswoman said the 7.0 version of Pathworks for Mac has been delayed because DEC is handling more features into it. The company said it sent out "mandatory updates" suggesting several fix customers might try, telling those with recurring trouble to call their local sales representative for help.

## Helps to have friends

Thirty-two vendors will support Novell this year in the announcement of a proposed Hub Management Interface standard. Chip vendors National Semiconductor, Advanced Micro Devices and others have reportedly taken what used to be a multipoint repeater (Ethernet wiring hub) on an 8V+ by 11-in. card and shrunk it down to a 1-in. chip. The adapter card vendors and hub vendors will build "Hubcards" to be inserted into Novell Network servers for a wiring hub right inside the server serving two to eight ports.

## What's two years among friends?

Two years ago, Oracle launched its manufacturing applications package with a glittery laser light show and dinner for thousands at a user meeting. Finally last week, Oracle said the product was ready for shipment to customers. The applications, which get their data from an Oracle relational database, are intended to complement Oracle financial applications now in use at 300 sites worldwide.

## Gottin' mighty easy

IBM and British Telecom (which now prefers to be known as "BT," since it really isn't just a British carrier anymore) seem to be laying all the groundwork for a serious joint international networking venture. First we heard about negotiations for BT's Syncoms company to manage a piece of IBM's Information Network in Europe; then BT chose IBM to supply NET switches for Syncoms's backbones. And next week, the two companies are expected to announce interconnection of their network management platforms.

## Novell packets in overdrive?

The U.S. Department of the Census is reportedly testing a software tweak to Novell's Netware LAN software dubbed "Burstmode," designed to rev up the transmission of Novell IPX packets across Netware networks. The software, said to be Novell-generated code for Netware servers and clients, reportedly allows several packets to travel together instead of in single file. Novell is mum on the subject, but the Census Department said it expects the software — which would challenge multiprotocol router vendors' IPX routing throughput — to be in production within 60 days.

The U.S. controller of the currency is warning banks not to allow customers to use the last four digits of their Social Security numbers as passwords for ATMs. They show up in too many places, the controller says, and therefore invite fraud. Maybe the best suggestion is to use the password your congressman uses at the congressional bank — "Bureaucracy." If you'd like to make a hot news deposit, call our brand-new News Editor, Alana Alper, at (800) 343-6474, fax him at (508) 875-8031 or CompuServe the lead at 76537.2413.

And they weren't just any guys, either.

They were a group of editors from *PC Magazine*, and in their February 26th, 1991

**BEST WINDOWS 3.0  
3270 TERMINAL EMULATOR:  
IRMA WORKSTATION  
FOR WINDOWS v. 1.0.  
FEB. 26, 1991.**

issue, they had some awfully nice things to say about IRMA™ WorkStation for Windows.

Some comments:

"DCA's product is by far the most flexible that we've tested."

"Its flexibility, powerful scripting language, interface, and asynchronous abilities make it a top choice."

And, finally, "It's nice to see IRMA...out there again as the leader of the pack."

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operating environment, only IRMA

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connectivity solution, just call,  
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and we'll have a free demo disk to you in no time.

And after checking out the capabilities that made IRMA WorkStation for Windows the *PC Magazine* Editors' Choice, we think you'll be pretty stuck on our windows yourself.

**DCA**

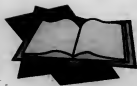


Mainframe applications are easier to use because of our QuickEdit™ and QuickPad™ features.

or token-ring connections, as well as

# Which UNIX® RDBMS did Hewlett-Packard®, IBM®, Unisys®, Data General®, AT&T®, Sun®, and Sequent® choose to demonstrate the power of their latest UNIX Systems?

## Informix.



**IDC Study on UNIX OLTP**  
UNIX On-Line Transaction Processing at Multi-User UNIX Sites (January 1991) states that some 47.4% of sites running commercial applications on multi-user UNIX systems are running OLTP. The study reports that Informix is in use at more sites than any other DBMS for UNIX OLTP applications.



**About the TPC**  
The Transaction Processing Performance Council (TPC) was founded in 1988 to define transaction processing benchmarks and to provide performance data to the industry. Today, 40 hardware and software vendors, including AT&T, Bull, Sybase, Data General, DEC, ASK/Ingres, Fujitsu, IBM, Informix, Hewlett-Packard, NCR, Olivetti, Oracle, Pyramid, Sequent, Siemens, Sun, and Unisys are members.

Within the past five months, every one of these companies selected and used the INFORMIX-OnLine database server to demonstrate to their customers the power of their latest UNIX systems. No other UNIX database product has been this extensively benchmarked—because nothing shows performance like OnLine.

### New TPC Benchmarks Used

In each case, the Transaction Processing Performance Council's rigorous TPC A and TPC B benchmarks—the new standard for comparing system and database performance—were used to highlight OLTP performance and database throughput.

### The Number 1 Choice for UNIX OLTP

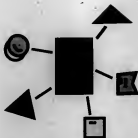
Informix is the number one UNIX OLTP choice. A January 1991 International Data Corporation (IDC) study shows that when it comes to UNIX OLTP applications, Informix products are installed at more than twice as many multi-user UNIX sites as our closest competitor. It's independent confirmation that thousands of companies worldwide rely on Informix-based OLTP solutions every day.

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**TPC vs. TPC Benchmarks**  
The TPI benchmark is no longer the accepted benchmark for measuring database performance. The new TPC tests establish more complete, thorough specifications than TPI, leading to more objective, verifiable results for comparing performance between hardware systems and software products. TPC Benchmark™ A measures OLTP processing performance. TPC Benchmark™ B—similar to a batch test—focuses on database throughput.



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